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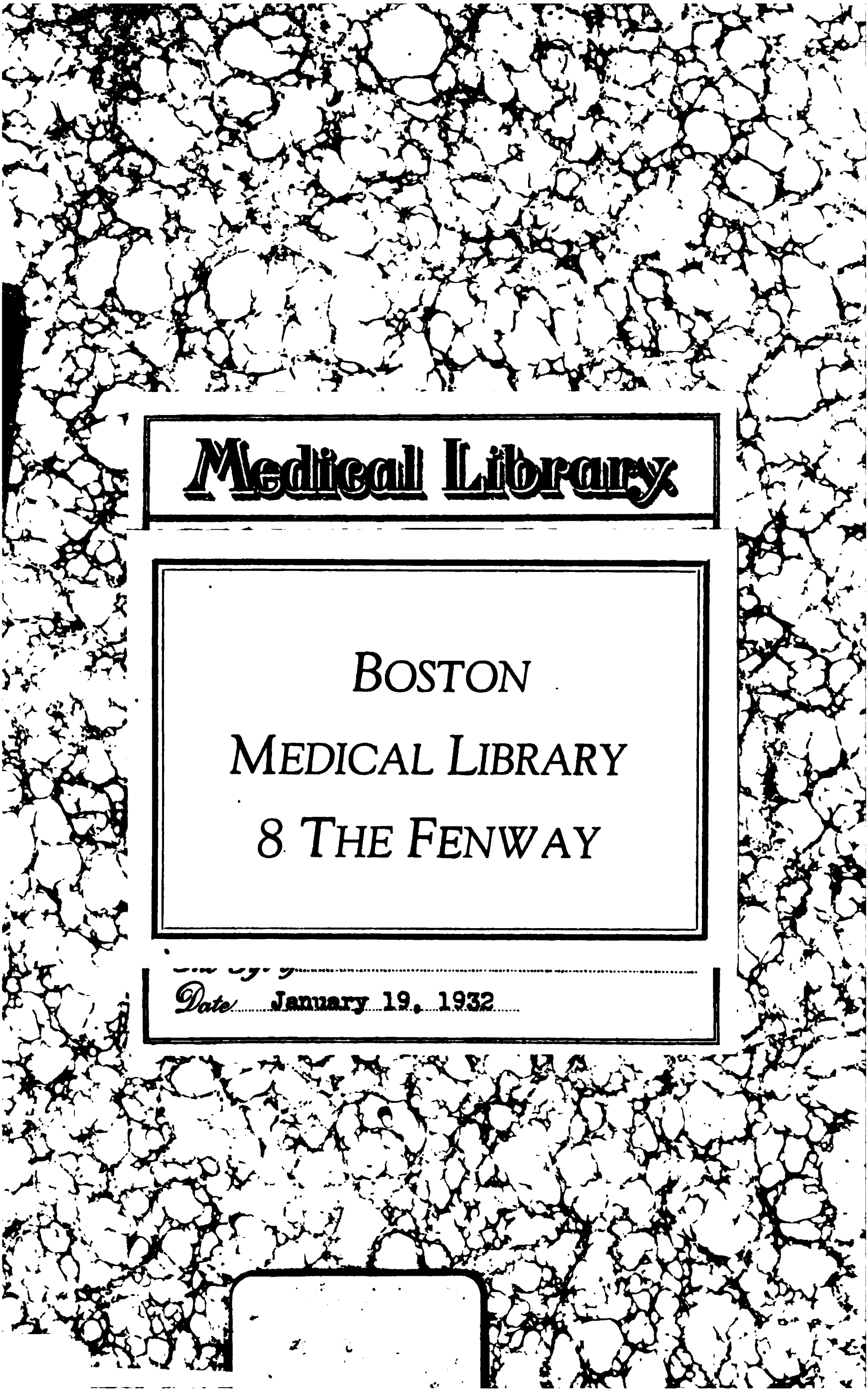

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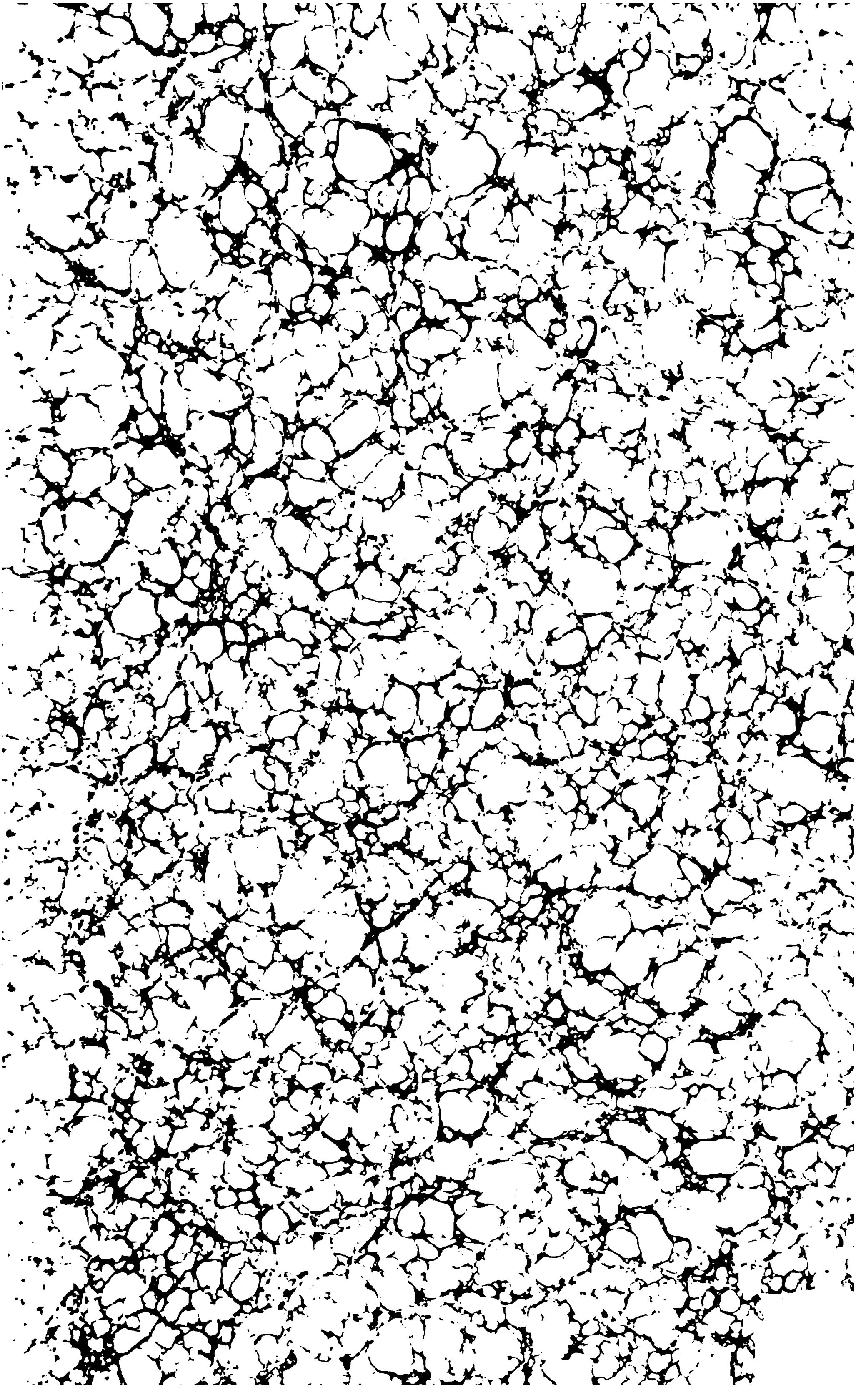

THE

ARCHIVES OF PEDIATRICS:

A MONTHLY JOURNAL DEVOTED TO THE DISEASES OF

INFANTS AND YOUNG CHILDREN.

EDITED BY
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VOLUME IV.
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THE

ARCHIVES OF PEDIATRICS.

VOL. IV.] JANUARY, 1887. [No. 1.

Original Communications.

PRIMARY NEPHRITIS IN INFANCY.

BY L. EMMETT HOLT, A.M., M.D.,

Attending Physician to the New York Infant Asylum.

THE cases which form the basis of this paper came under the writer's observation within a period of eighteen months; a fact which has led him to the conclusion that primary renal disease in infancy is by no means so rare as has generally been supposed. They are published for the purpose of drawing more attention to the importance of the examination of the urine at this time of life, something which heretofore has been overlooked almost entirely except in cases of diphtheria and scarlet fever.

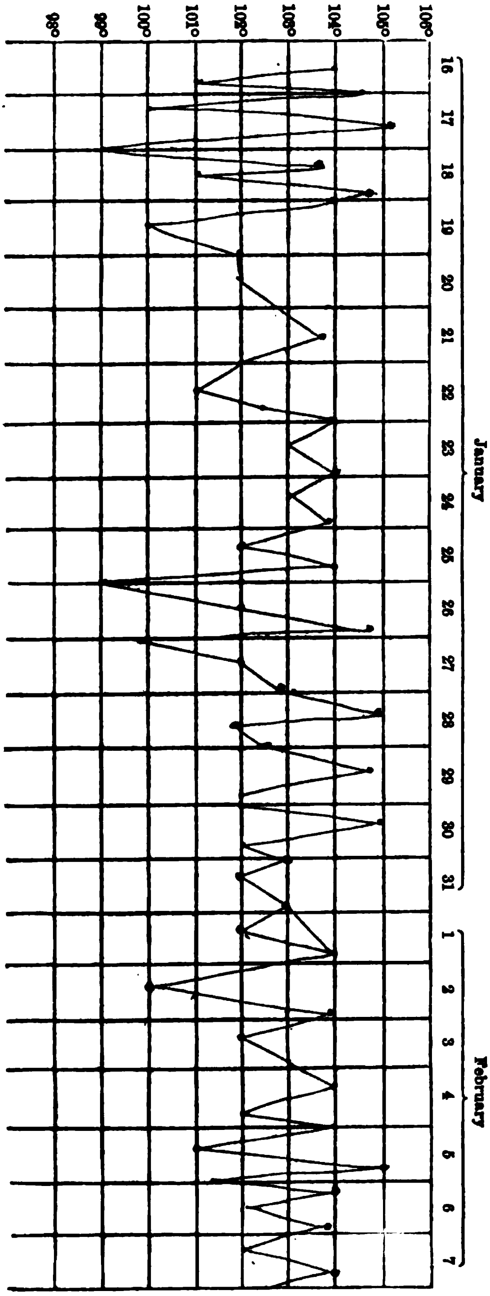
CASE I. *Acute interstitial nephritis in a child of seven months; three weeks' duration; steadily high temperature; death; autopsy.*—W. D., male, inmate of New York Infant Asylum, was taken, without apparent cause, quite suddenly ill, January 16, 1886, with high fever and severe accompanying symptoms. The family history was tubercular on the father's side. With the exception of a few days, six weeks before, while teething, the child had never been sick. At noon, on the date referred to, the temperature was found 104° F.; pulse, 160; respirations, 40. No evidence of disease in the chest or elsewhere was found, and six grains of antipyrine were given in three doses within an hour. At 5 P.M. the child was quiet and sleeping, and the temperature had fallen to 101°. It rose again at 9 P.M. to 104.5°, when the antipyrine was repeated, falling to 102° at 11 P.M. From this time until death the temperature was steadily high, except when reduced by antipyrine, the administration of which in the manner mentioned was almost invariably followed by a fall of from two to four degrees. This is graphically shown by the accompanying chart.

Marked restlessness accompanied the fever from the very first, and, in spite of full doses of sodium bromide, he seemed likely to go into convulsions. The child would strike his head, tear at his mouth, and throw himself violently about in the crib. This condition was relieved by the antipyrine better than anything else tried, and the usual dose of six grains generally produced a quite natural sleep. These symptoms persisted until January 19, when I first saw the patient. The pulse had been about 160, and respirations 40; the bowels inclined to be loose. A very careful and satisfactory examination was made of the chest, throat, and abdomen, without revealing any signs whatever of disease. Other than the restlessness, there were no nervous symptoms. The urine was tested for albumen, but none found. From the record it does not appear that any further examination was made. Still, the child's general appearance indicated that it was seriously ill. It took the breast most of the time quite well until the 20th; after that not so well, and some days not at all.

There was no special change until January 23, the eighth day, when for the first time there were found in the lungs fine râles on both sides behind, but no other signs of disease here. The lungs had been frequently examined before this with great care, but always with negative results. There had been no cough. The respirations were not particularly frequent, 40 to 44 per minute, the pulse ranging from 150 to 160.

During the next two days the child became quite drowsy and inclined to sleep much of the time, unless disturbed. The general symptoms now indicated great prostration. He had become very pale, face cyanosed at times, pulse rapid and thready, peripheral circulation poor. At times took the breast badly; a marked cough now appeared.

By the 28th, the thirteenth day, decided cerebral symptoms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February

CASE I.

were present. The abdomen was retracted, head thrown back, and neck rigid, pupils small and responding sluggishly to light, respiration shallow and at times irregular, and the drowsiness was almost continuous. The râles in the lungs were more abundant, though there was no evidence of consolidation. There was no vomiting, and the bowels were still loose.

The next four or five days brought very few marked changes. In spite of free stimulation and all efforts at nutrition, the child grew steadily weaker. Cerebral symptoms continued. Almost continuous automatic movements were present in the hands and feet much of the time. He cried when much disturbed, otherwise was steadily drowsy. The pulse was weaker, but still was about 160 per minute. The respirations were shallow and irregular at times, once reaching 60, but generally about 40 per minute. The pupils were contracted and responded sluggishly. There was marked retraction of the head.

On February 4 the pulmonary signs were more marked; râles on both sides behind, diminished resonance over the right side behind, and tympanitic dulness on the left side. A few râles in front; no bronchial breathing. A systolic murmur was now heard for the first time, loudest over the base of the heart on the left side, but transmitted towards the left shoulder and in the vessels of the neck. The apex-beat indicated slight enlargement,—it was one-quarter of an inch to left of nipple.

The urine had up to this time been passed quite freely. None having been passed now for six hours, hot applications were made over the bladder, and in a short time ℥iii were voided. It contained albumen one-sixth of the bulk; sp. gr. 1013; a deposit half an inch deep in conical glass, showing under the microscope great numbers of casts, mostly granular, a few hyaline and epithelial, from the straight and convoluted tubes, and a great many pus- and blood-cells.

The urine continued moderately free, having the same character as that recorded; the respiration became feeble, cyanosis was added to the coma, and he died comatose two days later,—February 7,—after an illness of twenty-three days. There were no convulsions.

Autopsy, forty-four hours after death.—Body well developed for the age and fairly nourished.

Head. Moderate congestion of the brain and membranes. The left lateral sinus contained a partially organized non-adherent clot; the other sinuses were normal. The pia was dull in appearance, somewhat cloudy, especially at the base, where it was apparently slightly thickened, but no lymph or pus upon its free surface. The dura seemed everywhere healthy. The ventricles were moderately distended with fluid. The brain itself was normal. A very careful search was made for tubercles, but none were found.

Chest. No fluid in pleural cavity, and no evidences of pleuritis. The left lung showed small areas of broncho-pneumonia in the upper lobe, and nearly one-half of the lower lobe posteriorly was consolidated from the same cause. Small scattered spots of broncho-pneumonia were found in the right lung behind. The lungs anteriorly were rather anæmic.

The bronchial glands were not enlarged.

Heart enlarged, weight one and one-half ounces. Walls normal. Aortic and mitral valves slightly swollen and reddened, a condition scarcely deserving mention, except for the murmur noted during life. Pericardium contained ʒii to ʒiii clear serum.

Abdomen. Liver considerably enlarged, fatty, and congested. Weight, twelve and one-half ounces. The intestines, I regret, were not opened, but presented externally no evidences of disease. Spleen firm, normal in appearance, weight one ounce.

Kidneys nearly twice the normal size; weight, together, two and three-quarters ounces; consistency succulent, capsule non-adherent; surface closely studded with yellowish masses slightly raised above the surface, from a pin's head to a pea in size. A few small hemorrhages beneath the capsule. Between the yellow nodules the surface was of a grayish-white color; general cloudy swelling. On section, the yellowish patches were found scattered through the organ, in some places following the line of the tubes, in others forming irregular masses in the cortex and the columns of Bertini. The largest were a fourth of an inch in diameter, situated at the apex of the pyramids, and two or three contained creamy pus. Striations of urates in some of the tubes, and a few hemorrhagic spots, completed the gross changes present.

There was slight congestion of the pelvis, but no other abnormal appearances. The ureters, bladder, and testicles were perfectly healthy.

Microscopical examination showed the usual lesions of an acute interstitial nephritis. The yellow areas were packed with pus-cells. There was besides a good deal of diffuse cell-infiltration throughout the whole kidney. In many places the epithelium of the tubes was granular and broken down, there was cast-matter in the tubes, and the capsules of the tufts showed some cell-proliferation, but the parenchymatous changes as a whole were very moderate when compared with the extent of interstitial changes. Dr. Francis Delafield requested a portion of the kidney for examination, and wrote me as follows concerning it:

"The kidney seems to give the lesions of an acute interstitial nephritis with the production of pus. The pus-cells are infiltrated in the stroma between the tubes, in small numbers in some places, in large numbers in others; but I saw no abscesses, properly speaking. There are also changes in the tubes, necrosis of the epithelium, and cast-matter."

I subsequently examined the specimens for bacteria, but none were found.

Was nephritis found in this case the primary lesion, was it secondary to broncho-pneumonia, or did both depend upon some infectious disease? I present the following considerations, which, although not absolutely conclusive, even to my own mind, still lead me to adopt the first view as altogether the most satisfactory one.

First, as to broncho-pneumonia. There were absolutely no symptoms or signs of any pulmonary disease until the eighth day: the respiration was not rapid, and there was no cough. I repeat these points with the greater emphasis, as broncho-pneumonia was what we were looking for every day. It was not until February 4, four days before death, that undoubted signs of this complication developed.

Notwithstanding the marked cerebral symptoms, the pathological changes were almost *nil*, excepting the thrombi in the sinuses, which must have been, from their appearance, of late formation. Hence we may, without hesitation, exclude meningitis as the primary lesion.

Regarding measles, scarlatina, diphtheria, variola, typhus, and typhoid, I may say that there was at no time an eruption of any sort upon the skin, nor any throat-symptoms. The child was born in the institution, and no case of any of these diseases had occurred during its lifetime, nor indeed for over a year before. There was also no desquamation. The normal spleen, both during life and at the autopsy, in spite of the fact that the intestines were not carefully examined, is to my mind sufficient evidence that the disease could not have been typhoid fever. The condition of the spleen also is a strong argument against any infectious disease. General tuberculosis seemed, in view of the family history, the most probable diagnosis during life, and very careful search was made at the autopsy for tubercles, but none were found. Why it was that albumen was not present in the urine on the fourth day, why the urine continued to be passed in fair amounts throughout the illness, are questions which I shall not attempt to answer. In view of the very extensive disease in the kidneys which the autopsy disclosed, it seems remarkable.

I have endeavored to record the facts as faithfully as possible, with the hope that the observations of others may throw some light upon them.

CASE II. *Acute nephritis in infant of eleven months; gastro-intestinal symptoms at first; albumen detected early; improvement; then relapse, high temperature, dropsy, and almost complete suppression of urine, coma, death. Duration, six weeks.*— F. M., male, inmate of New York Infant Asylum; the only positive facts in the family history were, that the maternal grandmother died of dropsy and an aunt of phthisis. The child was nursed by the mother and throve well until weaning was attempted, in February, 1886. Vomiting and diarrhœa followed, with quite severe general symptoms, the temperature reaching 103° F. the first day. By the third day of the illness the gastro-intestinal symptoms were much ameliorated, but a low fever and marked restlessness continued.

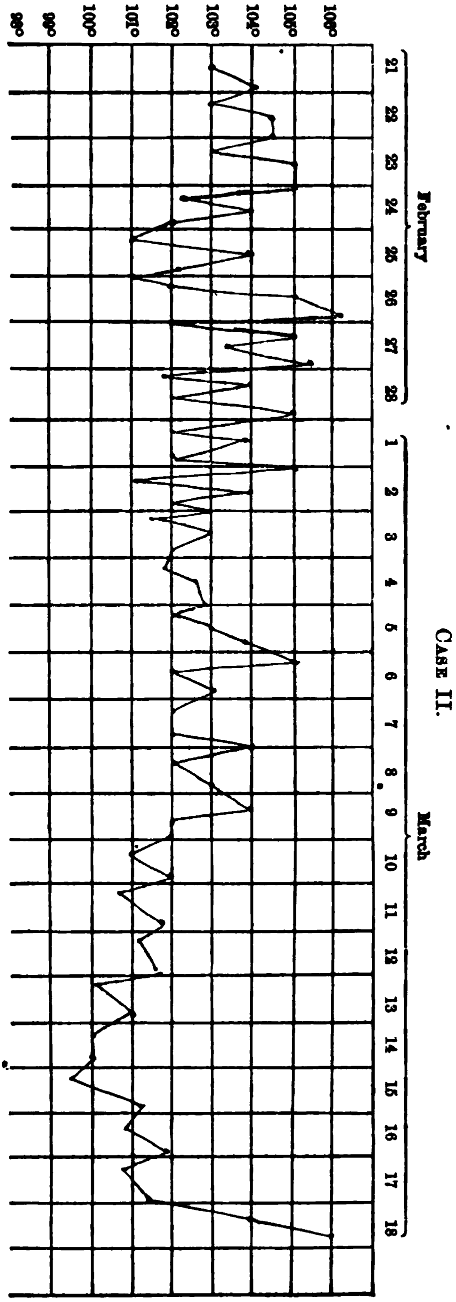
An examination of the urine showed "a large trace" of albumen.

Mustard packs were ordered to the kidneys, and digitalis and citrate of potash given internally. The urine became rather more free after this, though it had not been noticeably scanty before. At the end of a week's illness the albumen was still present, and now a few hyaline casts were found. Not enough urine could be collected to obtain the specific gravity. The albumen soon disappeared, the temperature remained normal, and there were no more urinary symptoms until February 23, ten days later.

At noon of that date the temperature rose to 103°, later to 104.2°, and the urine became completely suppressed. During the next three days but very little urine was secreted. On two occasions a very small quantity could be collected for examination, this showing the presence of albumen, though not in large quantity. The general symptoms at this time were most alarming. The temperature ranged steadily between 103° and 105°, unless reduced by baths or antipyrine. The depression was quite marked, and the restlessness at times extreme. The pulse ranged from 130 to 180, the respirations being from 40 to 50. There was no vomiting. The child was having three or four watery stools a day, which seemed rather salutary than otherwise, and no effort was made to check them. Careful and repeated examinations were made of the lungs and spleen without finding any positive signs of disease.

February 25. Enough urine was collected for the first time to afford a satisfactory examination. It was of a dark red color, specific gravity 1017, contained albumen 50 per cent. by bulk, blood, renal epithelium, and many granular and a few hyaline casts. It was impossible to estimate the amount of urine passed in twenty-four hours.

February 26. The temperature remaining high (105° in the morning) and the skin dry, the child was put into a hot-air bath. It was left in for an hour and forty-five minutes without inducing perspiration. The child was then removed on account of extreme restlessness and exhaustion, and the rectal temperature fifteen minutes afterwards registered 106.2°. This was reduced, by baths of 95°, to 102.6° within an hour,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CASE II.

oxygen and brandy being freely given at the same time. Free perspiration was finally induced by vapor-baths, and the temperature further reduced to 102°. This fall was but temporary, however, as it again rose to 105° in a few hours.

Until March 2 there was no especial change in the symptoms. The temperature continued high, reaching 105.4° every day, and rarely falling below 102°, even by the use of baths and antipyrine. It was a continuous temperature, being almost as high in the morning as in the evening. There were no cerebral symptoms other than those sufficiently explained by the high temperature. Digitalis, tr. ferri chlor., and antipyrine were the only drugs given. There was no marked vomiting. The urine was still scanty, and it was only with great difficulty that enough could be obtained for examination. He was kept alive by oxygen and alcoholic stimulants freely given.

On March 2 he developed the signs of bronchitis, and his respirations became from that time more rapid, from 50 to 60 per minute. During the next week the temperature-range was a little lower, rarely rising to 104°; the urine was passed at times quite freely, then again it would be almost suppressed for a day or two. It still contained blood, hyaline, and granular casts in abundance, and a variable amount of albumen, never more than about one-sixth by bulk. Vapor-baths and the same treatment as above indicated were kept up. Œdema of the lower extremities was first noticed on March 8, but was not marked.

From this time until his death, which took place on March 18, he grew more and more feeble; lay for the greater part of the time in a semi-stupor; passed a fair quantity of urine containing casts and albumen in large amounts. The œdema increased in the lower extremities, but never became excessive. He became completely comatose, and died in that condition, having been ill for six weeks.

The only marvel was that he lived so long. Before death he developed quite an extensive broncho-pneumonia of the left lung.

Unfortunately, an autopsy could not be obtained. The diagnosis in this case seems to be much clearer than in the one first recorded. It seems quite likely that the first albuminuria may have been a complication of the gastro-intestinal catarrh. This attack, however, was not serious, and yielded so far to treatment that all symptoms had been absent and the urine had been free from albumen for ten days, when some unknown cause lighted up an acute nephritis which went on to a fatal result. As this case followed the preceding one by only a month's interval, the remarks made regarding the absence of infectious diseases from the asylum may be applied here.

CASE III. *Almost complete suppression of urine at the beginning, with high temperature; duration two weeks; recovery.*—Stephen M., aged two years, markedly rachitic, and always a delicate child, after doing very well for a month, was noticed on the morning of November 5, 1885, to be very drowsy and heavy. His temperature was found 104° F.; pulse, 160; respirations, 32. The pupils normal, bowels regular; there were no gastric or pulmonary symptoms. Under the use of antipyrine his temperature fell to 99°, but rose again in the evening to 102.8°. No urine was passed during the following night, and the next morning a catheter was introduced, but only half an ounce could be withdrawn. It was high-colored, and contained ten per cent. albumen by bulk. The temperature ranged between 100° and 102.5° during the day, other symptoms unchanged.

Hot fomentations were used over the kidneys, and spts. æth. nit. and pot. acetat. given in small, frequent doses. During the following twenty-four hours about three ounces of urine were passed, containing a little blood and about the same amount of albumen. Temp. A.M., 100°; P.M., 101°.

November 8. Temp. A.M., 103.4°; pulse, 144; resp., 42; P.M., temp. 101°. Urine a little freer, albumen 12 per cent. by bulk. Digitalis added to the treatment. Signs of slight bronchitis over the lungs.

November 9. Temp. A.M., 101°; pulse, 140; respiration, 40; P.M., 101.2°. Passed a very small quantity of urine.

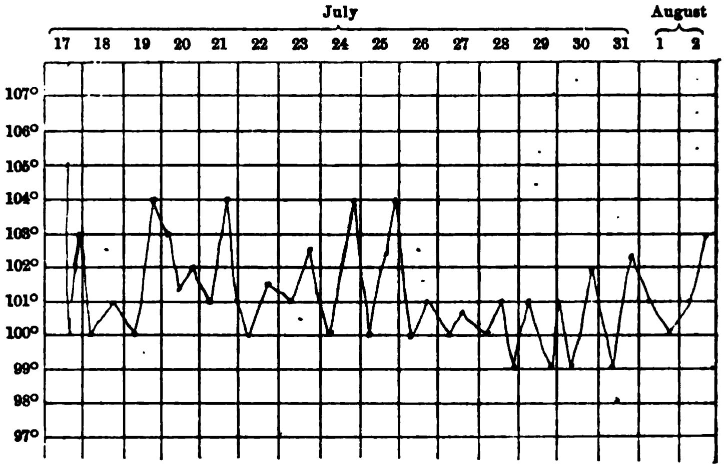
November 10. About one ounce of urine passed; temperature from 99° to 100°.

After this date the urine was much freer; the temperature did not go above 100°, and the albumen gradually diminished until November 18, when only a trace was present, and after that none was found. Improvement in the child's general condition was coincident with these changes in the local symptoms. He had lost flesh rapidly before, but now began to take nourishment well, to gain in flesh steadily, and went on to an uninterrupted convalescence.

No dropsy was present at any time, and no cerebral symptoms except those mentioned at the beginning of the attack. He was watched closely for two or three months, but showed no tendency to relapse.

I regret very much that this case is incomplete, inasmuch as no microscopical examination of the urine was recorded. Still, the other symptoms in the course of the disease left little doubt in my mind that the case was one of primary nephritis.

CASE IV. *Acute diffuse nephritis, beginning with gastro-intestinal symptoms, marked fever, scanty urine, frequent vomiting. Death on nineteenth day; autopsy.*—Mary C., æt. eight and one-half months, a healthy child, breast-fed, well until July 8, when she began to have greenish diarrhœal pas-sages, not very frequent, the attack lasting for six days. During this there was fever, but never above 102°. July 14 to 17 there was no fever, the child ate and slept well, but seemed rather dull. In the afternoon of the 17th the temperature


CASE IV.

suddenly rose to 105°, there was great restlessness, a rapid pulse, but no relapse in intestinal symptoms. The temperature fell to 100° after gr. vi of antipyrine, but rose in a few hours again to 103°. For the week ensuing it reached 104° almost every day, the curve not being a regular one. The pulse was correspondingly rapid and of fair volume. Frequent careful examinations were made of lungs, heart, and spleen, without at any time finding anything to explain the temperature. Nourishment was usually well taken, though vomiting occurred two or three times in a day. The child was reported at this time to have every day or two what was described as a "blue spell,"—*i.e.*, coldness and lividity of the extremities, lips, etc. I never happened to see her in one of them. The nervous symptoms were pretty well controlled by Dover's powder, and the case went on without special symptoms except the fever and a progressive weakness.

Thinking the "blue spells" mentioned might be the cold stage of a malarial paroxysm, quinine was given, gr. iv, three times a day, but without any permanent effect either upon the temperature or the general symptoms.

July 25, the urine was examined for the first time, and found to contain by bulk twenty-five per cent. albumen. The amount of urine passed up to this time had not been noticeably small.

From this time treatment was addressed to the kidneys. Mustard packs to the loins were kept applied; tr. ferri chlor. and digitalis were given internally. The temperature now ran a little lower.

July 31, the albumen had diminished somewhat in amount, but hyaline and granular casts were found in the urine in addition to epithelial cells. The patient grew steadily weaker, the restlessness again became more marked, the attacks of vomiting became more frequent, and in spite of free stimulation she died, August 2, of exhaustion. There were no convulsions, at no time any dropsy, or complete suppression of urine. The temperature during the last three days was higher again, but not above 103°.

Autopsy, fourteen hours after death.

Body fairly nourished; no œdema.

Brain normal; about two and a half ounces cerebro-spinal fluid escaped.

Lungs anæmic, anterior borders emphysematous; no fluid in pleural cavities, no pneumonia.

Heart: slight increase in pericardial fluid, wall and valves normal.

Liver: weight ten ounces, normal in appearance.

Spleen slightly enlarged, Malpighian bodies unusually prominent.

Stomach dilated, capacity nine ounces, mucous membrane normal.

Intestines: small intestine healthy, slight follicular colitis (old) most marked in rectum, and sigmoid flexure.

Kidneys considerably enlarged, weight together two and one-fourth ounces; surface smooth, flabby in consistency, light colored; capsule non-adherent, small patches of congestion on the surface of the organ. On section the cortex was found swollen, of a yellowish-gray color, mottled, with here and there small patches of congestions. The markings were indistinct in all the pyramids.

Ureters were normal, and bladder empty.

Microscopical examination of the kidneys showed the epithelium swollen and coarsely granular, and a very marked infiltration of small cells throughout the organ. These were not uniformly distributed, but in scattered areas, where they were so numerous as to render the normal renal elements invisible. There was also some new connective tissue present.

The pathological diagnosis was acute diffuse nephritis, the interstitial changes greatly predominating over the parenchymatous changes.

These specimens were examined by Dr. John S. Thacher, Director of the Laboratory of the New York Polyclinic, who confirmed the opinion given.

CASE V.—*Diarrhœal symptoms early; later, almost complete suppression of urine for four days; marked nervous symptoms; death; autopsy.*—Betsey E., aged two and a half months, breast-fed, a well-nourished child, began, on July 22, to have greenish diarrhœal stools, which attack, at no time severe, lasted until July 27, when the movements were again normal. Four days later a relapse occurred. The stools were thin and yellow, but not very frequent. Under the use of ol. ricini, followed by bismuth, gr. v every two hours, very marked improvement occurred; on the third day there were only two stools, and the same number on the fourth. Notwithstanding this, the child's general condition became alarmingly worse. There was very great prostration; it was too weak to take the breast. The urine was noticed to be very scanty on the third day, and on the fourth day, none at all having been passed for nearly twenty-four hours, a catheter was introduced, but only half a teaspoonful could be obtained. This contained albumen, pus-cells, and blood-globules; no casts were seen; but the quantity was so small that the examination was unsatisfactory. There was no œdema; the respirations were rapid and irregular, and the child was frequently cyanotic. The fontanelle was depressed. Vapor-baths were used from this time on, always giving temporary relief to the symptoms. The pulse was weak and very rapid, but the temperature was not above 99°.

On the fifth day there were four movements, one natural, the others green, with some mucus. No urine whatever was passed, so far as could be ascertained. Child growing steadily weaker.

Sixth day. A very small quantity of urine was voided; four movements from the bowels. No improvement. Baths, stimulants, and digitalis, with spts. æth. nitrosi, given.

Seventh day. Baths every three hours, and oxygen administered. There were signs of pulmonary collapse posteriorly over both lungs; respiration shallow and rapid; no elevation of temperature; no urine passed. The child died soon after midnight, quietly, having had no convulsions.

Autopsy, thirty-four hours after death.—Body well nourished; no dropsy.

Brain. Moderate congestion of the meninges and brain itself; sinuses empty, and nothing else pathological found.

Lungs showed areas of recent collapse on both sides posteriorly, otherwise normal; no pleurisy.

Heart. Weight one and a quarter ounces; foramen ovale closed; walls and valves normal.

Liver. Weight four and a quarter ounces; moderately congested; gall-bladder empty.

Spleen. Weight one-quarter ounce; normal in appearance.

Intestines. Slight recent catarrhal changes in colon; mucous membrane swollen, covered with greenish tenacious mucus; pigmentation of solitary follicles. Similar changes were found in the mucous membrane of the ileum, with pigmentation of Peyer's patches, and slight swelling.

Kidneys. Weight one ounce and one drachm, about normal size, lighter color than normal, both in cortex and pyramids; cortex swollen and thickened; tubes of pyramids contain infarctions of urates, well marked. There is a slight redness and swelling of the mucous membrane of the pelvis of the kidney, but no calculi here. Bladder empty, its mucous membrane normal.

Microscopical examination. There were in the convoluted and in the straight tubes broken-down epithelium and granular matter; the epithelial cells lining many of the tubes were swollen and granular, and in others appeared perfectly healthy. There were essential changes in the stroma.

It was a surprise and somewhat of a disappointment on the examination of these specimens that more positive evidence of the disease was not revealed by the microscope. The clinical symptoms of albuminuria, suppression almost complete for four days, with profound disturbance of the nervous system, all point, to my mind, conclusively to an acute nephritis. That casts were not found in the few drops of urine obtained for the single examination proves nothing. It was altogether a very unsatisfactory one.

My own impressions regarding this case I am glad to have confirmed by so high an authority as Dr. Francis Delafield, who has made the statement to me that he had seen acute nephritis plainly diagnosticated by the symptoms, severe enough to prove fatal, and yet both the gross appearances and the microscopical examination disclosed no positive changes, even in cases where the autopsy was made a few hours after death.

I make these remarks in anticipation of the criticism that the changes found in the case were post mortem, and hence inconclusive.

No great importance is to be attached in this case to the infarctions of urates in the straight tubes. This is so often found in infants dying during the first few months from a great variety of causes, that it is extremely doubtful if it is of any pathological significance except a temporary lithæmia. Further light is thrown upon this case by the two following ones.

CASE VI. *Nephritis, lithæmia (?); recovery.*—Susan H., three and one-half months old, small and delicate, was admitted to the asylum August 17, weight ten pounds, suffering from pertussis. For the pertussis a two per cent. solution of resorcin was applied by a swab to the throat five times a day.

September 23, she was noticed to be very drowsy, sleeping much of the time, and the mother reported the child's urine to be green in color. Two days later a specimen was obtained for examination. It was of an olive-green color, gave a decided reaction for albumen, but the quantity obtained was too small to give any idea of the amount of albumen present. The first marked elevation (103° F.) of temperature was noted at this date. The infant continued in the same dull, stupid condition, taking the breast poorly. The passages were a little greenish, but not frequent, and there was no vomiting.

September 27, about six ounces of urine were obtained. It contained quite a large proportion of albumen, hyaline and epithelial casts quite abundant, leucocytes, and very many uric acid crystals. Its reaction was strongly acid. It was still of a dark olive color, and the resorcin was discontinued as a possible factor; although no such urine was noticed in any other cases of pertussis similarly treated, and there were fifteen or twenty of them in the institution.

September 29: no especial change in the child's condition, temperature still rising irregularly to 101° or 102°, pulse rapid and weak, respirations at times irregular and always rapid. No enlargement of liver or spleen, several spots of cranio-tabes in the occipital region. Albumen was still present in about the same quantity in the urine, and uric acid crystals were abundant; a careful search failed to discover any casts, however.

There was very feeble breathing over the left upper lobe, high-pitched, and a few râles were heard. A diagnosis of pulmonary collapse was made.

The symptoms were so like those of Case V. that all who had seen the two were struck with the points of resemblance, and it was believed we had here to deal with a mild general nephritis and lithæmia. The following treatment was adopted: The child was removed from the breast, a poor one. Stimulants were to be freely given. Oxygen was given for seven minutes every hour, and acetate of potash, gr. v, every three hours.

This was sufficient to keep the urine alkaline in reaction; the albumen became less, the uric acid disappeared, and the quantity of urine was increased. The temperature ran lower now, rarely reaching 101°.

Notwithstanding, the general condition did not change markedly; the pulse and respiration were rapid and frequently irregular; the abdomen was tympanitic, and the head was much of the time held back in opisthotonos. The potash was reduced to gr. xx per diem, this being sufficient to maintain the alkalinity of the urine.

By October 9, the albumen was reduced to a mere trace; with this the nervous symptoms subsided and the case went on to a steady convalescence.

November 8: her weight had increased from nine pounds on October 9 to thirteen pounds. The urine had been for a long time free from albumen and casts, and all treatment was stopped after October 18. There was only one rise in the temperature after October 5.

The presence of albumen in the urine for twelve days in considerable amount, even though casts were not numerous, seems sufficient evidence of parenchymatous nephritis. The discoloration of the urine most likely came from the resorcin. Although I have been unable to find this symptom recorded as due to this drug, its resemblance to carbolic acid in its composition and in many of its effects suggests this as highly probable. That the nephritis which existed was also from resorcin I think hardly possible: first from the small amount received; secondly, the absence of all urinary symptoms in the other cases in which resorcin was applied. It does not take much carbolic acid to discolor the urine, and I think the same is true of resorcin.

The question of lithæmia is not so satisfactorily disposed of. I have no doubt in my own mind of its existence in this case, both from the symptoms and the effect of oxygen and alkalies in the treatment. The irritation in the tubes from excess of uric acid may have stood in a causative relation to the albuminuria.

(To be concluded.)

CERTAIN PECULIAR FEATURES OF BRONCHITIS AS IT OCCURS IN CHILDREN.*

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BRONCHITIS as it occurs in children is a disease of such common occurrence, and one that every physician is so familiar with, that it may at first seem like repeating an old, old story to bring anything that pertains to the subject before you. But it is on account of the very fact that we see so much of it in all its multitudinous forms in our daily practice, and that there are so many phases that it assumes, and complications it attends, which often lend it much interest, that I have ventured to make it the basis of my remarks this evening.

It is not my intention to go into the subject of bronchitis as it occurs in children in all its various manifestations, but merely to invite your attention to certain peculiar features of the disease, which, owing to the close resemblance they frequently bear to certain other pulmonary affections occurring in infants and older children, in my opinion render the study of this disease of great interest. I also wish to present you with certain views, by which, I believe, the distinction between the forms of bronchitis I shall consider and other lung-diseases in children, which may often be mistaken for simple bronchial catarrh, or *vice versa,* may be more clearly recognized, and to point out certain dangers that are likely to arise as complications or results of the commonly supposed mild forms of the disease, together with the most rational and successful method of preventing and combating them.

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Before entering upon the subject-matter of the paper, I would like to say a few words respecting the method of thoracic examinations in children. Many physicians are in the daily habit, when called upon to treat a case of thoracic trouble in children, of performing auscultation and percussion without undressing the patient. This is especially apt to be the case if the ailment seems slight. Such a superficial and unsatisfactory method is to be highly reprehended, for it often exposes the physician to the risk of serious errors of diagnosis, much to his own discredit and the misfortune of his patient. Every child, however young and however slight its trouble may appear, who presents symptoms of an affection of the thoracic viscera, should be entirely undressed about the upper part of the body for the purpose of inspection, auscultation, and percussion. Young children, and more especially those under six months of age, breathe superficially, and consequently rapidly, owing to their feeble powers of muscular contraction as opposed to the pressure of the surrounding atmosphere upon the yielding chest-walls and the resistance of the natural elasticity of the lung-tissue. Consequently, it is often almost impossible, especially in weakly children, to distinctly hear the vesicular murmur without the chest being laid bare and the ear put upon its utmost acuteness to catch the sounds. Where the ear alone is used in auscultation of children, I frequently have had recourse to the plan of making pressure with the left hand over the sternum during expiration, while the back of the chest is supported by my head, so as to induce a stronger inspiration. As a rule, however, I prefer the use of the binaural stethoscope, the one known in this city as Ford's being the one I daily use. Its advantages over the ear directly applied to the child's chest are many. It does not create in the little patient so much alarm, nor require so much restraint, which is all the more likely to bring on a spell of crying and thus defeat our object, as when the ear is applied directly to the chest. Then again, the area over which the sounds are heard through the stethoscope is more limited and more definitely located than when the unaided ear is used. This point is often of considerable value in forming a diagnosis in the pulmonary affections of children, more especially in collapse and catarrhal pneumonia.

When the patient is quite young and unable to sit alone, it will be found that the most convenient position for auscultation is with the child held in the mother's or nurse's arms, its head resting upon her shoulder. This position presents the back for examination, which in children is the most desirable part, as the respiratory sounds are more easily heard there, and the child's attention is less excited by the examination than it might be if the front of the chest was used. When the child is older, it is best seated in the mother's lap or upon a table for purposes of auscultation, so that much bending of the head will not be required on the part of the physician, as this latter position is frequently apt to interfere with an accurate appreciation of the sounds heard.

Percussion is best made with the fingers, the left forefinger laid upon the chest and the right one used as a pleximeter. A rubber pleximeter may, however, have certain advantages, which I shall not deny. A light stroke should be made, as the chest-walls of the child are quite thin, and a heavy stroke might occasionally fail to elicit a certain amount of dulness that existed, owing to the resonance of the superimposed healthy lung-substance. The variations of the force of the stroke can easily be regulated by the use of one or more fingers. One great advantage in using the fingers in making percussion is the easy recognition of *resistance* by the sense of touch, which the plexor and pleximeter fail to convey.

It is always of the greatest usefulness in helping to form a diagnosis of lung-affections in children to take notice of the rapidity of the pulse and number of respirations, and to note their ratio to each other. This pulse-respiration ratio, in children under two years of age in a state of health, may be averaged at about 3½ to 4. These are the figures given by Henoch and confirmed by Eustace Smith. In bronchitis, collapse of the lung, catarrhal pneumonia and croupous pneumonia, the ratio is often below 3. In bronchitis the alteration of the ratio depends upon the size or order of the bronchi that are involved, being less for the larger and correspondingly more for the smaller ones.

It is equally of importance to observe the character of the respiratory act. In children between the ages of six months and two years the accent will be found to be on the expiration, and in bronchitis and catarrhal pneumonia this becomes so exaggerated as to produce laborious respiration, which is characteristic of these affections. Here expiration is accentuated, owing to the obstruction in the tubes caused by swollen mucous membrane or viscid mucus or both, which obstruction is compensated for by an increased expiratory force and longer duration of the effort. (Riegel.) In croupous pneumonia the expiratory effort is usually accompanied with a moan. Pleurisy in children is not attended with either of these features of respiratory alteration. These peculiarities of the respiratory act are not so noticeable in infants under six months of age, owing, perhaps, to their feeble powers of muscular contraction. Palpation may be employed to detect the vocal fremitus in older children, and ronchi, or sounds in the larger tubes, in children of all ages. It is preferred by Vogel to auscultation in bronchitis, especially when the child is refractory. The suggestion which he makes to warm the hands when they are cold, before applying them to the child's back, is well to be kept in mind. I merely mention this method of examination to say that I have long since ceased to depend upon it to any extent, having found auscultation far more satisfactory.

It should never be omitted to take the temperature with a reliable thermometer. This I prefer to do in the rectum, as we obtain it here quicker and more exactly than in any other part, unless under the tongue, and here it is practically impossible for it to be done in very young children.

Returning to the subject proper of the paper, it has been my experience during sixteen years of private and dispensary practice among children to meet with many cases of bronchitis under two years of age, where the catarrhal process appeared to be limited to one lung only at a time, and to special areas of that lung. These cases at first presented, to my mind, such peculiar physical signs as to cause me to hesitate in my diagnosis. Their further development and termination, however, dissipated all doubts on the subject, and their study proved highly instructive.

In three of these cases the smaller bronchi were involved for nearly the entire extent of the affected lung, and in one, only a few of the larger bronchi of one side were involved. This could be readily determined from the character of the râles heard, which, in the first mentioned cases, were of the medium or subcrepitant order, and distributed over the lower two-thirds of the affected side, while in the latter case the râles were of the coarse sonoro-sibilant kind, few in number and limited to certain spots.

Each case was attended with an elevation of temperature, ranging from 102° F. to 104° + F. The respiration and pulse were both accelerated, the ratio being altered more in those cases where the finer variety of râles were heard than in the other, where the coarser bronchi were found. It was not as low, however, as in cases that I have seen, where the bronchitis affected both lungs simultaneously. In one of the cases it was thought likely that the catarrhal process had extended, during the attack, to the vestibule of the alveoli, producing the complication of catarrhal pneumonia, though if such was the fact it is highly probable that this occurred in distinct and separate lobuli, as at no time could bronchial respiration or increased vocal resonance be heard, nor any impairment of percussion resonance detected.

It is a commonly received opinion, and one seldom otherwise stated by writers on children's diseases, that bronchitis invariably attacks both lungs simultaneously, without regard to the size or order of the bronchi affected, or the extent of the catarrhal process. It is true that this is the ordinary manner of its occurrence, but it is now recognized as equally true that bronchitis may affect one lung or a portion of one lung only, and the bronchi of the third order or bronchioles of that lung, without involving the bronchi of the first or second order. It is usually the case for the catarrhal process in simple bronchitis to begin in the larger and medium-sized tubes and extend from thence to the smaller ones, but we now find that the process may remain limited to either order throughout the attack, or extend inversely from the bronchioles to the larger tubes. (Riegel, "Ziemssen's Encyclopædia," vol. iv. page 364.) Vogel, whose views, to my knowledge, are the most notable exception to those of most writers on the subject, regards it as seldom the case that both lungs are simultaneously affected in bronchitis, especially when it occurs as a complication of typhus and exanthematous fevers. J. Lewis Smith mentions unilateral bronchitis as occurring only with tuberculosis and pneumonia, being limited to those tubes surrounded by the tubercular or inflammatory product. West refers to vesicular bronchitis independent of general inflammation of the air-tubes, which may be limited to the lower border of one or the other lobe, or involve the entire lower lobe of either side. The interesting point in such cases as these is the differential diagnosis to be made from pleurisy and croupous pneumonia in their forming stage. This is not always of such easy accomplishment, unless certain minor points, which here become of great significance, are also taken into consideration. The subcrepitant râles heard upon auscultation might easily lead one to suppose on first thought that he had either a croupous pneumonia or a pleurisy to deal with. But the crepitus of croupous pneumonia is much finer and heard in a puff at the end of inspiration, while the subcrepitant râle of bronchitis I have found can often be heard both on inspiration and expiration, in which experience I am pleased to find that I am corroborated by Riegel in "Ziemssen's Encyclopædia," article Bronchitis. The friction râle of pleurisy, as occurring in children, is a crepitant or subcrepitant râle, but it is more superficial and harsher than the subcrepitant râle of bronchitis, which is a moist râle. Occasionally it may even be coarse or rubbing in character when very little effusion exists. It will be understood that I am referring to the differential diagnosis between pleurisy and croupous pneumonia, and unilateral bronchitis where the *smaller bronchi alone* are involved. Where the larger tubes of one lung are affected in bronchitis the diagnosis is comparatively easy, unless the disease is limited to the lower lobes, when it may be possible to confuse the bronchitis with a dry pleurisy. The sonoro-sibilant ronchi of bronchitis of the larger tubes, however, are less sharp and superficial, and are heard for the most part in expiration, while in a dry pleurisy the râles are never sibilant, and are heard both on expiration and inspiration. The breathing of bronchitis differs from that of croupous pneumonia in that it is never bronchial, unless complicated with catarrhal pneumonia, when the subcrepitant râle is heard over the same spot as the bronchial breathing, while in croupous pneumonia crepitus and well-marked bronchial or tubular breathing are never heard over the same spot. In pleurisy the breathing is weak or suppressed when not bronchial.

Percussion affords little satisfaction in the earliest stage of a pleurisy or croupous pneumonia, as there is yet little alteration of resonance, though later the dulness will at once exclude bronchitis. The character of the respiratory act, however, will aid us somewhat in distinguishing bronchitis from pleurisy, as in the former it is always more or less laborious, while in the latter it is more superficial with an effort at suppression. In croupous pneumonia it is usually accompanied with a moan on expiration.

The area of lung over which the subcrepitant râles of bronchitis affecting one lung are heard is in my experience so large that it will at once command attention. This was found to be the case at the earliest stage of the affection. In two of my cases the râles were heard as high as the interscapular space, nearly on a line with the spine of the scapula. It is rarely the case that we find a croupous pneumonia or pleurisy developed in its early stage to this extent. The râles of bronchitis become moist and are bubbling or cooing in sound by the second or third day.

Perhaps it is more likely that cases of pleurisy in children may be mistaken for a bronchitis, rather than a bronchitis for a pleurisy. The former is the more serious error of the two as regards results, though fortunately the same treatment may be applicable to both diseases.

It has been previously remarked that in one of the cases lobular or broncho-pneumonia was thought likely to be present. My reason for so thinking was based solely upon the persistence of the increased temperature, which lasted for nine days. Riegel, before quoted, I find mentions, however, that the temperature sometimes becomes elevated for each successive advance of the catarrhal inflammation, where the different orders of the bronchi are attacked at distinct intervals of time. Where the attack was not originally diffuse, this would cause an apparent continuous elevation of temperature for a greater length of time than where the bronchitis is limited in extent or more diffuse at the onset of the attack, leaving out of consideration the involvement of the infundibula and air-vesicles. Such would seem now to have been the possible result in my case. Henoch states that there are no means of determining with certainty whether a broncho-pneumonia is present during the course of a bronchitis, nor can it be positively denied. Especially is this likely to be the case when the broncho-pneumonia is diffused in numerous foci throughout the lung. When, however, these foci coalesce to a certain extent, Henoch refers to tinkling râles and diffuse bronchophony as being present without distinct dulness, the percussion note being more likely tympanitic. As it is generally conceded that most cases of diffuse bronchitis are found on post-mortem examination to be attended with more or less broncho-pneumonia, either the result of the extension of the catarrhal process into the alveoli, or from collapse of certain portions of the lungs from plugging of the bronchioles with tenacious mucus, in the absence of any certain set of signs for determining this complication to be present we must for the while be content with the thermometric guide.

The next point of interest that I have observed in bronchitis in children, and to which I will direct your attention, is the fact that a slight attack, involving only the larger tubes perhaps, may, in children of certain constitutions, cause enlargement of the lymphatic glands at the root of the lungs, which speedily undergo caseous degeneration in their central portion, and afterwards softening and breaking down may infect the various organs of the body with tubercle. It has been my unfortunate experience to meet with one such case in particular, where the bronchitis was not regarded as at all serious in character, being unattended with any high elevation of temperature, the râles being dry and subcrepitant and more manifest on one side. Improvement occurred in the condition of the bronchi under appropriate treatment, and only a few large sonorous bronchi remained. The little patient was thought well enough to be discharged from further treatment, under the impression that in a few more days, with a continuance of the remedies, the lungs would be restored to their normal healthy condition. Ten days after, however, symptoms of tubercular meningitis set in with vomiting, and the child died on the sixteenth day from a well-marked attack of this fatal disease. An autopsy could not be obtained. There had been no special symptoms of enlargement of the bronchial glands, such as the spasmodic cough, which is by many regarded as characteristic of this complication, at any time during the attack of bronchitis. Still, from what we know concerning the pathology of tubercle, it is evident to my mind that the meningitis was the result of absorption of broken-down caseous material, which it is more than probable was furnished by one or more of the bronchial glands. I should also state that the meningitis was attended from the commencement of the attack with a diarrhœa, and it is even likely that this uncommon condition in tubercular meningitis was the result of a more extensive infection manifesting itself, besides, upon the intestines.

It is a common experience on post-mortem examination to find enlarged bronchial glands as the result of a catarrhal pneumonia, especially where breaking down of caseous deposits has taken place. These glands, on section, generally show their central portion in a state of caseous degeneration, which often has advanced to the stage of softening. From a knowledge of the anatomical structure of the lung-substance, it is easy to understand how the bronchial glands may become enlarged as the result also of a simple bronchitis. According to Hamilton, of Edinburgh, these glands have a direct and continuous connection with the lymphatic spaces found in the peribronchial fibrous tissue and the lymphatic vessels of the lobula septa. The vessels which form the connecting link can be traced in a recent specimen of coal-miner's lung-tissue by means of the particles of carbon they contain, which forms in them a natural injection. This enlargement of the bronchial glands in bronchitis is of a sympathetic nature, apparently analogous to the lymphatic disturbance of distant parts in inflammatory irritation of the skin. In certain constitutions, especially that of a strumous nature, their peculiar products of inflammatory irritation are evolved, and caseous degeneration, usually beginning in the centre, and ending in softening and breaking down of the deposit, occurs. This has been found to exist in cases of simple, uncomplicated acute bronchitis, where there was no possibility of its being produced through absorption of caseous matter from a catarrhal pneumonic deposit. The rapidity with which these glands sometimes become enlarged, undergo caseation, softening, and infect the body with tubercle is somewhat remarkable.

In the case of a child under one year of age that came under my care at the New York Foundling Asylum, and who finally died of general tuberculosis, premonitory symptoms of meningeal irritation were observed on the third or fourth day of an attack of bronchitis. The head was thrown back as in opisthotonos, though not held rigid, and at times it was rythmically rolled from side to side for several minutes' duration. A catarrhal pneumonia subsequently developed, coincidently with more fully developed symptoms of tubercular meningitis. Death did not occur until at the end of two months. Pathological appearances of enlarged bronchial glands, with central caseous softening and general tuberculosis, were found on autopsy. Huguenin, in "Ziemssen's Encyclopædia," vol. xii. page 517, reports a case almost identical with mine, where the autopsy showed general tuberculosis from a foci of infection in the bronchial glands.

It is now a well-recognized fact that many forms of tubercular disease that were formerly regarded as originating spontaneously have some primary source of infection in some part of the body, and that this infecting substance is of the nature of a ferment. Koch's renowned investigations concerning the *bacillus tuberculosis* have laid the foundation for a theory that explains the mode of producing tuberculous manifestations in the body that may be accepted as definitely settling this view. It is not within the limits of the subject of this paper to discuss the question of tubercular infection through inhalation of the specific germs, but, aside from this possible manner of infection, there is abundant evidence to show that a deposit of softened caseous matter in the lungs, lymphatics, or elsewhere in the tissues is the true infecting source of tubercle.

Bronchitis of a more or less degree of severity frequently occurs during the course of summer diarrhœa in children. In very young children, especially if not robust and thriving, and in older ones where the diarrhœal attack is severe, this complication is liable to prove most serious in its consequences, owing to the readiness with which it is attended with collapse of the lung. The etiology of the bronchitis is not perfectly clear to my mind, though from its frequent occurrence during the progress of the diarrhœa, and its being rarely observed during the summer months in otherwise healthy children, I am inclined to attribute it to a congestion of the pulmonary circulation, dependent upon an alteration in the quality and volume of the blood, the result of the profuse diarrhœic discharges. In other words, its cause is probably analogous to the pulmonary congestion which occurs during an attack of cholera in the adult. In a certain number of cases, especially during the process of dentition, I have observed the diarrhœa and bronchitis occur simultaneously. These cases occur in winter as well as summer, though in a far less number, and are due to sudden changes of temperature acting upon the intestinal and bronchial mucous membranes, which, owing to the depression of the nervous system induced by the process of dentition, renders them more susceptible to such influences. As before stated, collapse of the lung, in bronchitis complicating summer diarrhœa in children, is mainly to be feared, owing to the fact that certain conditions favoring its production are frequently present. Such is the weakened and enfeebled state to which the system has become reduced by the exhaustive diarrhœa, the respiratory muscles being rendered thereby less able to overcome the resistance and pressure of the surrounding atmosphere in the act of breathing. The rachitic diathesis, if present, is an additional favoring factor. These conditions acting as predisposing causes, aid to a great extent the mechanism of collapse of the lung, which is well known to consist in the drawing of a plug of mucus from a larger into a smaller bronchial tube, thereby occluding it, and, acting upon the principle of a ball-valve in a syringe, allowing the air from within the alveoli to escape, while none from the distal side is permitted to enter.

I now wish to add a few words in regard to the management and treatment of acute bronchitis as it usually occurs in children, which will apply, with few exceptions (to be soon mentioned), to all forms of the disease, including, of course, the ones I have referred to; but before speaking of the treatment proper I would like to call your attention to certain hygienic conditions under which the little patient should be placed, as well as the adoption of prophylactie measures, which in delicate children is of prime importance. Regarding prophylaxis in bronchitis, nothing can be better than establishing the habit of cold bathing for the infant. This may be carefully regulated by the use at first of sponging with cold water from the head down to the shoulders and spinal column while the child is in the tepid bath. Afterwards douches and the whole bath should be given successively as age advances. The cold bathing strengthens the integuments and prepares the body for sudden cold or other atmospheric influences.

Most of our patients, in children affected with subacute bronchitis, are not usually considered sick enough to be kept in bed. The youngest ones have to be carried in the nurse's or mother's arms, even if very sick, while the older ones, if sick enough to be kept in bed, are often allowed to remain in their ordinary clothes. I often find among the poorer classes, and occasionally in families of the better class, the little children almost suffocated with the number of clothes they have on, irrespective of the temperature of the weather. I believe such heavy dressing only exposes the child to contract an additional catarrh upon the slightest change of the weather. If the attack is not severe enough to confine the child to the bed, I direct it to be kept in the room in its ordinary dress, but if sick enough to go to bed, the clothes are to be removed and nothing but the night-dress worn. Infants while sick should be at all times loosely dressed, and when carried about should be wrapped in a light shawl or blanket. It is a commonly received idea that children affected with bronchitis, however slight, should be kept in-doors. My experience in a dispensary practice of twelve years in children's diseases has shown me that except in severe cases this is not necessary for a prompt recovery, providing always that the child is kept warm by suitable covering while in the open air. In private practice, however, as there is no occasion for the child to go out of doors, it should be kept in the room. The temperature of the room should be kept at from 65° F. to 70° F., and proper ventilation secured at night by keeping one or more windows drawn down from the top for about eight or ten inches. One great source of all catarrhs in this city in my opinion is the intense heat which is kept up in the dwellings during the entire winter. Even in the rooms of tenement-houses this is often found to be the case in an extreme degree. The sudden change experienced on going into the street or even another room or hall-way, or coming from the street into the apartment, will inevitably produce the condition of "catching cold." This may be explained, according to Rosenthal, by the superficial blood-vessels of the body becoming paralyzed after one has remained for any length of time in an overheated apartment, while the body temperature rises at the same time. If the overheated body, with its enormously dilated superficial blood-vessels, is now suddenly exposed to cold, the body temperature descends below the normal, and the blood of the superficial parts, so suddenly cooled, courses through the internal organs and cools them off more suddenly than would be the case from the simple influence of cold, without the previous influence of greater heat. This sudden cooling acts as an injurious influence in causing congestion in this or that organ, especially if it is already enfeebled, and hence less resistant. It will always be of advantage, if the attack is in any way severe, to have a certain amount of moisture in the shape of steam diffused through the air of the room. This can be easily done by keeping water boiling over an alcohol stove. The addition of a small quantity of turpentine will be found highly useful and refreshing.

The therapeutics of bronchitis may be regulated according to the order of the tubes involved and the rise of temperature which accompanies the disease. In mild cases, where the catarrhal process is limited to the larger tubes and there is very little or no increase of temperature, occurring in infants under six months of age, I have found such remedies as the wine of antimony in doses of one-fourth to one-half drop in combination with the wine of ipecac in doses of one-half to one drop repeated every hour prove highly efficacious. Small doses of the golden sulphuret of antimony, one-twentieth of a grain triturated with sugar of milk and repeated hourly, have also given satisfactory results. A stimulating embrocation, as equal parts of spirits of turpentine and olive oil, applied with a piece of flannel to the back and front of the chest until reddening of the skin is produced, will prove of additional service. In children over six months of age, similarly affected, the dose of the antimonial and ipecac wines should be increased to one drop each. I have also found the tincture of bryonia of the German Pharmacopœia, in doses of one-half to one drop every two hours, of benefit in some cases. In a few persistent cases of subacute bronchitis in older children, the inspissated juice of *Sabal serrulata*, or saw palmetto, has given gratifying results. The dose is from five to twenty drops three times daily. Where there are evidences of a strumous constitution, the emulsion of cod-liver oil with or without the hypophosphites of lime and soda will be found all-sufficient.

In severe cases of bronchitis accompanied with an elevation of temperature, and where the medium-sized and smaller tubes are involved, I am in the habit of giving tincture of aconite-root in doses of one-half to one drop according to age, repeated every hour, with the result of reducing the temperature and establishing resolution. If a spasmodic element of the cough is manifest to any extent, much benefit may be derived from the tincture of belladonna in drop doses, given alternately every hour with the aconite. It will be remembered that in the early stage of inflammation of a mucous membrane the secretion is at first diminished, the membrane becoming dry and swollen. Afterwards, the secretion is increased in quantity, while at the same time it becomes altered in quality, being viscid and tenacious. Hence in the early stage of an acute bronchitis, where dry subcrepitant or sonoro-sibilant râles are heard, the practice which is often followed, of giving stimulating expectorants, such as the carbonate and muriate of ammonia and squills, in free doses, can only result in aggravating the existing condition. Much more successful results, in my opinion, will be obtained by giving such remedies as will relieve the congestion and swelling of the mucous membrane, through acting upon the force of pressure of the blood circulation or by derivative action upon distant organs whose functions are in a measure compensatory in character. Such is the effect of aconite that I have mentioned, and veratrum viride that I have not used. Nitrous ether, which is a depressor of arterial tension, as the other nitrites are known to be, which thus explains its diuretic effect, is a time-honored remedy in bronchitis, and may be cited as representing the latter class. Spirits of Mindererus, from its sudorific action upon the skin, is always indicated. A favorite combination of mine, which has seldom failed to render me valuable service, is, Liq. ammon. acet., f ʒiv; spts. ether. nit., syr. ipecac., āā f ʒiss; syr. senegæ, f ʒi; syr. limonis, f ℥i. M. ʒi every three hours. This formula has been published in an incomplete form in Johnson's Formulary of Wood's Library, and I here take occasion to make correction of the error due, no doubt, to the printer's oversight. I am in the habit of employing this formula daily in my practice. Its use is not confined to the treatment of bronchitis alone, for I find it equally serviceable in the whole range of acute pulmonary complaints as occurring in children. I do not regard the small amount of senega present as having an expectorant action, but more, if you like, of a specific effect upon the ciliated columnar epithelium of the bronchial tubes.

I seldom have resort to opium except in combination with camphor, as in the tr. opii camph., when it is administered in five- to ten-drop doses, principally at night, as a sedative for the cough.

Hot poultices of flaxseed, sprinkled on the surface with mustard, made large enough to encircle the entire chest and covered with oil-silk, form an important addition to the treatment of the severer grades of bronchitis. Pieces of tape extending across the shoulders should be tacked to the cloth holding the poultice, in front and behind, to prevent the poultice from slipping down. The effect of the heat and moisture, together with the counter-irritation produced by the mustard, which can be regulated in amount to suit the demands of the case, are unquestionably of the highest benefit. Where the bronchitis has extended to the infundibula and air-vesicles and catarrhal pneumonia has developed, I have every reason to believe that a continuous mild counter-irritation, with the flaxseed poultice lightly sprinkled with mustard, has often been the principal means of enabling me to witness the successful termination of my cases. The poultice should be changed about three times during the day and once through the night. Spongio-piline wrung out with hot water answers every purpose of the poultice, besides being cleaner and less troublesome to apply. But, being expensive, it can be afforded only by wealthy families. West recommends the spongio-piline to be sprinkled with a stimulating liniment, such as lin. camph. co., ℥i; tr. canth., tr. opii, āā ʒij. M., when it is desired to produce counter-irritation; but I have found the ordinary mustard, lightly sprinkled over the inner surface, do all that was wanted.

When the râles have become soft and bubbling, and not disposed to clear up quickly, I have found three to five drops of a saturated solution of muriate ammonia given every two hours have the happiest effect in clearing up the excessive secretion, notwithstanding in some cases evident signs of catarrhal pneumonia were present. It is important, especially in subjects of a scrofulous and rachitic diathesis, to establish a healthy condition of the mucous membrane of the bronchial tubes as soon as possible. In these cases there is a general tendency for some large ronchi to remain scattered over the lungs after the more severe symptoms have disappeared. The administration of tonics, as quinine and iodide of iron, together with cod-liver oil, is here clearly indicated. Counter-irritation to the back, in the interscapular space, with tincture of iodine should be used, as it is also rightly regarded as a valuable means of promoting absorption of the enlarged bronchial glands, which I have shown are likely to exist.

Inhalations have recently been introduced in the treatment of bronchial catarrhs, and have been found to give valuable assistance in hastening a cure. I have had little if any experience with them in children, but can see no reason why they might not be effective with those over two years of age. They may be used in the form of steam inhalations from a croup-kettle, the water being medicated with turpentine, terebene, iodine, or eucalyptus, or whatever article may be desired. Older children may submit to the use of the hand atomizer, in which the wine of ipecac, as recommended by Ringer, or Dobell's solution, which is alkaline and antiseptic, may be employed.

In those cases where bronchitis occurs together with diarrhœa as the result of changes of temperature, the antimonial wine in drop doses, repeated hourly, will be found to have a decided effect in relieving both affections at the same time. When the bronchitis occurs as a complication of summer diarrhœa, counter-irritation to the chest with the flaxseed and mustard poultice, together with the administration of stimulants, is chiefly to be depended upon. In infants or weakly children, where a tendency to collapse of the lung is apparent, crying should be provoked and encouraged as much as possible, and alcoholic stimulants freely given. In such cases Day advises the child to be laid face downwards, as it assists breathing, and prevents the tendency of the secretions to gravitate to the posterior and lower surface of the lungs. The same author also suggests that when vomiting becomes a troublesome symptom, the medicine be given immediately after a spell, in order that it may have a chance to remain longer in the stomach and some portion of it be absorbed.

Jacobi wisely advises plenty of water as a drink, for the purpose of supplying a fluid for the liquefaction of the viscid secretions, and so promoting their easy expulsion. It will also prevent caseous degeneration by keeping the cells bathed in a moisture that will hasten absorption.

I have thus endeavored to bring before you some points concerning bronchitis in children that are not usually dwelt upon at much length in the books, and if it will be the means of inviting a free discussion, I shall feel amply compensated for my time and labor in presenting the subject to you.

47 WEST FIFTY-SIXTH STREET.

INCONTINENCE OF URINE—THE INFLUENCE OF VACCINATION IN CAUSING CUTANEOUS ERUPTIONS—THE DIFFERENTIAL DIAGNOSIS BETWEEN SCARLET FEVER AND MEASLES.

A Clinical Lecture Delivered at the Medico-Chirurgical Hospital of Philadelphia,

BY WILLIAM B. ATKINSON, M.D.,

Professor of Diseases of Children in the Medico-Chirurgical College.

REPORTED BY WILLIAM H. MORRISON, M.D.

GENTLEMEN :—The mother of this little boy brings him to us with the statement that he is seven years of age, and that ever since he was born he has suffered with incontinence of urine. This has been allowed to run on without any special treatment, the trouble being that people do not realize that this is a disease which can be cured. The boy's general condition is good, and he appears to be perfectly well with the exception of a want of power in the sphincter of the bladder to control the escape of the urine.

In the treatment of this case we shall begin with the administration of nux vomica and ergot, and if that is not sufficient, we shall, if necessary, add atropia. He will receive the following combination:

℞ Tinct. nucis vomicæ, ʒi ;
Ext. ergotæ fld., ʒvi ;
Syrupi aurantii cort., ℥iv.
Sig.—Shake well. A teaspoonful four times a day.

Every night before he goes to bed the bladder must be emptied. I look for improvement inside of one week. I have seen a great deal of this affection, and let me urge upon you not to let children be badly treated because they are suffering with incontinence of urine. The majority of people seem to think that it is only a filthy habit or the result of laziness. One mother told me that she thought that her little girl suffered in this way because she was afraid to get out of bed in the dark. I have at this time under my care a little girl eleven years of age, apparently perfectly well, with the exception that once in a long while, about once a month, she has a peculiar cutting pain at the orifice of the urethra which compels her to at once empty the bladder. Thinking that possibly there might be a stone in the bladder, I made a careful examination, but failed to find any such condition. There seemed to be simply a peculiar sensitiveness about the meatus, and when the pain would come on she would deluge herself instantly. I treated her with small doses of atropia, giving the one-one-hundred-and-twentieth of a grain three times a day until the characteristic effects of the drug were produced. Since she has been under treatment the condition has been decidedly better. You must always bear in mind that these cases of incontinence of urine require constant attention, and this must be thoroughly impressed upon the parents and those having charge of the child.

Remarks on the Influence of Vaccination in causing Eruptions on the Skin.—This child is brought to us with a number of sores over the body, and the father thinks that they are the result of vaccination. On inquiry, we learn that the vaccination was performed ten months ago, long before this eruption made its appearance; we may therefore exclude vaccination as the causative agent in this case. This brings up a point in regard to vaccination, and that is, when you are called to vaccinate a child be sure that the child is perfectly well. Always examine for the presence of any eruption. Some time ago I was asked by a lady who had recently moved into a house which had just been built to vaccinate her child, which was about four months old. When I came to examine the child, I found quite an eruption on the body and limbs. No cause for the eruption could be detected. There was no fever, and the general condition was good. The vaccination was postponed, and in about a week I again called, when the mother told me that she had found out that the eruption was due to bedbugs. This was not thought of, because the house into which she had moved had never before been occupied. If the vaccination had been performed before the eruption had appeared, the skin-trouble would in all probability have been attributed to the operation. Some years ago a number of children in the lower part of the city were vaccinated with a very powerful form of matter, and the result was a large number of sore arms. In one case, that of a child two months old, there was an abscess extending down to the humerus. This matter was probably perfectly good, but it was excessively strong. Still, some children, apparently perfectly healthy when vaccinated with matter which has acted with perfect satisfaction in other cases, will become quite sick, and will develop very sore arms.

In regard to the time at which vaccination should be performed, your rule should be to vaccinate the children under your care when they reach the age of three or four months, unless there is some condition requiring it earlier. Such a course shows the people that you believe in the power of vaccination to prevent that horrible disease, variola. Variola could be completely stamped out if we could vaccinate all the people in the world, and vaccinate all the children as fast as they come into being. We need nothing more than the recent experience of our Canadian neighbors to convince us of the efficiency of vaccination. Among the English population, with whom vaccination is almost compulsory, only a small proportion were attacked with variola or varioloid, while nine-tenths of those who had the disease the worst, and who died, were Canadian-French. These are a peculiar people. They keep largely to themselves, and some of them speak nothing but French. These Canadian-French refused to be vaccinated, and it is an invariable rule that when an epidemic of smallpox occurs in that region they are the ones who suffer.

In vaccinating, I believe that you are just as safe in employing the virus from a healthy child, if you know its history and that of the parents, as if you used the virus from a heifer, and you probably are less liable to have annoying results. In many cases where the virus directly from the heifer is used, a large scar is left. This may be objectionable in later years, especially in young ladies. When you do vaccinate, do not rest satisfied until you are sure that the child is protected. If you get one perfect vaccination, it probably will never be necessary to repeat the operation. My belief in this is very strong from my own experience. During my thirty-four years of practice I have seen some of the worst epidemics that have occurred in this country. I have sat by the bedsides of many persons dying of malignant smallpox when deserted by their friends. I have never had the slightest fear, as I believe that one perfect vaccination affords protection forever. I have been vaccinated again and again by the best vaccinators in Philadelphia with the purest virus, but it has never had the slightest effect. When the first vaccination exhausts the soil, so to speak, I believe that you cannot take smallpox.

I shall order for this case a tonic, as her system appears to be run down, giving her the following combination:

℞ Syrup. ferri iodidi, ʒiv;
Potassii iodidi, ʒi;
Syrupi sarsaparillæ, ℥iii.
Sig.—A teaspoonful three times a day.

At the end of a week the dose will be increased in frequency to four times a day.

It is not uncommon for patients to present themselves attributing the condition from which they may be suffering to vaccination. In the present instance there is no doubt that vaccination had nothing to do with the cutaneous affection. Even where there is a possibility that the vaccination has not been performed with the greatest skill, always protect your brother practitioner. When the reputation of a professional brother is in your hands see that it does not suffer, and when you come to leave the profession you will feel the better for it. All through this country, before the American Medical Association was organized in 1847, medical men lived like a set of pirates. The organization of the American Medical Association brought a new era, and I am proud to stand here to-day its Permanent Secretary. You will find all through this country that membership in the American Medical Association makes a man feel that he has to do right and act in an honorable manner towards his professional brethren. When you go home as medical men with the diploma of this college, join your county medical society, and do what you can to rub against your neighbor and make both yourself and him brighter.

Some Points in the Differential Diagnosis of Scarlet Fever and Measles.—I shall occupy the remainder of the hour in going over in a general way the more important diagnostic points between scarlet fever and measles. It is important that you should be able to make the diagnosis at an early period, in order that you may set at rest the fears of the parents. Measles is a very common affection, and is not so limited to a particular age as is scarlet fever. Scarlet fever rarely occurs after the age of ten years. When it does occur later, especially in women who are pregnant, it is almost always fatal. I recall four or five cases in which scarlet fever attacked pregnant women, and in all death resulted.

There are three stages in these affections. First we have the stage of invasion, which continues until the eruption makes its appearance. This is followed by the second, or eruptive stage. Finally, when the eruption begins to fade, we have the stage of desquamation. In a typical case of measles the symptoms are peculiar. For the first twenty-four or forty-eight hours the child presents the appearance as though it had taken a severe cold. It sneezes continually, and the nose and eyes are running. In scarlet fever, on the contrary, we have a bright, glaring, glistening eye. In measles there is more or less pronounced cough; the patient avoids the light. There is fever, marked thirst, and want of appetite. Examination of the throat shows that it also is suffused. The mucous membrane of the nose, trachea, and bronchi is also increased in vascularity. The cough is at first dry, and may have a croupy character. The temperature in measles is never very high, while in scarlet fever it is high from the outset. In an average case of measles the temperature reaches 102° F. or 103° F. The pulse varies from 110 to 130 per minute. In measles the fever presents remissions and exacerbations, whereas in scarlet fever the temperature is continuously high. The face is flushed and swollen, and presents an appearance similar to that seen in smallpox. Vomiting is rare in measles, while it is almost always met with at the beginning of scarlet fever. Vomiting may, however, occur in measles at any time before the eruption makes its appearance. The child is restless and drowsy, but it does not sleep. The first stage lasts from two to six days; usually it is about four days. On the third or fourth day the eruption will appear. By exposure to cold, or from other causes, the appearance of the eruption may be protracted for a long time, even one or two weeks. The eruption begins on the face, then spreads to the neck, then to the limbs, and finally to the trunk. This eruption has a peculiar appearance. In scarlet fever it looks as though the child had been covered with a mustard-plaster, and the eruption is not at all elevated: the skin is perfectly smooth. In measles a distinct roughness is felt on passing the finger over the surface. The eruption of measles is apt to be in patches, and not diffused, as in scarlet fever. The spots of eruption are small and irregular. These spots at times unite, leaving between them spaces of healthy skin. When the spots unite they form patches of a crescentic shape. In very plethoric children the eruption is more profuse than it is in anæmic individuals. In these cases the diagnosis from scarlet fever is sometimes very difficult. You must make up your mind by a consideration of all the symptoms presented. Remember that the eruption is never vesicular or pustular. When you press the eruption it disappears, but returns almost immediately; while in scarlet fever the period during which the eruption is absent is longer.

In measles on the second day of the eruption it begins to fade. When the eruption appears the fever abates. The rash disappears in the order of its appearance. After the eruption has faded, the cough may continue for a few days. I may say that cough is rare in scarlet fever. I do not recall ever having seen a case in which cough was present.

We have a form of measles known as rubeola niger, or black measles or malignant measles. In this form of the disease the blood is in a very vitiated condition. I think that this always occurs in children who have been exposed to a very virulent form of the affection while the child has been in a broken-down condition of health. These cases are always fatal.

We may have measles without the catarrh, and some say that we may have measles without the eruption. I think, however, that these cases are really examples of some other form of disease and not true rubeola. Very often these cases without catarrhal symptoms are examples of German measles, or rötheln.

In measles the desquamation is scanty, and in many cases it will not be observed. When it occurs, it begins from about the fourth to the seventh day of the eruption. By bearing in mind these few general points, you will as a rule be able to differentiate between these two affections.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Raven: On the Extreme Duration of Infectiousness in Measles, Mumps, Smallpox, Scarlatina, and Diphtheria. (*Rev. Mens. des Mal. de l'Enf.* [from *Brit. Med. Jour.*, vol. ii., 1886], August, 1886.)

It is generally allowed that diseases preceded by a long period of incubation are characterized by a well-marked course, that the consequences are usually unimportant, and that their infectiousness is only of short duration. On the contrary, a short period of incubation generally precedes a very acute form of disease, which, after a longer or briefer course, preserves an infectious character in connection with sequelæ of a severe character, and is often complicated by relapses. It may therefore be stated as a principle that the duration of incubation and the duration of infectiousness stand in an inverse ratio to each other. Vaccinia presents good illustrations of these variations. Although the progress of the vaccinal vesicle may show a remarkable regularity, there are differences in the duration of the period of incubation among children vaccinated with the same vaccine and under the same conditions. In measles, which has a long and quite uniform period of incubation, lasting from twelve to fifteen days, the infectious property is developed early and disappears early. A child who has had measles may safely return to school three weeks from the time that the eruption appeared.

Mumps also has a long period of incubation, lasting from two to three weeks or even longer. Though the infectious property begins early, it does not continue for a very long time. The quarantine which is imposed upon children who attend schools in which mumps has prevailed need not continue more than three weeks after the glandular engorgement has disappeared. The period of incubation of smallpox is perhaps more definitely established and more uniform than that of any other acute disease. It includes a course which lasts fifteen days and has very few variations. In this disease also the infectious power is very great from the beginning, following the rule which has been laid down in this respect. According to Marson, smallpox is communicable from the time that the initial fever begins. He states that it may be transmitted by means of the breath of the patient before the eruption has appeared upon the surface of the body. The termination of the period of infection in smallpox is also well defined. As soon as the surface of the skin is freed from crusts and clots, there need be no more fear of infection. Though the period of infection is well marked from the beginning, it does not follow that it will be of short duration. Among those who have not been vaccinated the time which is necessary for the disappearance of the eruption is considerably longer than with others. Scarlatina is usually supposed to have a short period of incubation, but it is subject to decided variations. In some cases its period of incubation is quite long; such is the case, for example, when it follows a surgical operation or a change of residence and atmosphere, which appear to have liberated a latent poison. Its infectious power is of long duration. The quarantine of those who have been exposed to the disease should continue for six weeks from the first appearance of the eruption, or until all evidence of desquamation and nasal catarrh has disappeared. The desquamation of the epidermis is usually considered as the most efficient cause of infection in scarlatina, but it is not the only cause. Scarlatina nephritis is frequently one of the consequences of scarlatina, and may become chronic. It may also be a means for the extension of the disease through the medium of epidermic scales, which are suspended in the urine, but which may be retained upon the clothing, the bed-coverings, or upon the ground. With regard to diphtheria, its infectious power is not of long duration. A child who is convalescent from this affection may be considered inoffensive, with respect to the propagation of the disease, three weeks after the first symptoms appear, provided there are no bad symptoms in the throat, no catarrh of the mucous membranes, and no albuminuria. Under certain circumstances the power of infection may be prolonged indefinitely. According to the theory of Astley Greswell, diphtheria may become chronic, especially in unsanitary neighborhoods; in such cases it may recur from time to time, and with the disease its infectious properties. If a patient is suffering from diphtheritic paralysis it is still possible for him to be a source of infection to others. A. F. C.

Meigs, A. V.: The Contagiousness of Scarlet Fever. (*Med. Record*, December 11, 1886.)

The object of this paper is to show that the degree of contagiousness of scarlet fever is not so great as is generally supposed. In order to prove this he shows how few instances there are of entire families of young children all being stricken with scarlet fever at the same time, not having been protected by a previous attack, as compared with measles or whooping-cough, where every child in a family is seized either simultaneously or within a short period of one another.

He considers variola, measles, whooping-cough, varicella, and rötheln as representatives of one type of the method of propagation of diseases, and scarlet fever, diphtheria, and perhaps typhoid fever, of another. With the first type it seems sufficient that an unprotected person should go into the room with any one suffering with one of these complaints to make it extremely likely that he will take the disease. With the second type, the question of some endemic influence seems much more largely to enter, and the usual history is that one or perhaps two members of a household are seized with the disease, and only when it is very prevalent in a given locality, its cause being present in an unusual degree of virulence, are whole households stricken down, and in this respect it bears a close resemblance to diphtheria and typhoid fever.

The following are some of the conclusions drawn: that experience shows that scarlet fever is not so actively contagious as some of the other exanthemata, and that it is so considered is due largely to its being so sudden in its effects; that it is comparatively slightly contagious during the first day or two after its outbreak, and that this is the time to take all reasonable precautions; that the disease is not nearly so much carried from place to place by persons themselves unaffected, transporting it upon their person and in their clothes, as is believed.

Winters: The Relative Influences of Maternal and Wet Nursing on Mother and Child. (*Med. Record*, November 6, 1886.)

Maternal nursing; its importance to the child. Very few children nursed exclusively at the mother's breast die during the first year,—even in institutions and among the poor in tenements in New York City. Very few children artificially fed, in institutions or among the poor, survive the first year. The children of wet-nurses who are put out to dry-nurse almost invariably die. In the upper classes, where there is intelligence and good care, with the feeding properly directed, a bottle-fed baby rarely dies during its infancy. It follows, therefore, that the poor, but especially the ignorant poor, should be urged to raise their children at the breast. In institutions, breast-, not bottle-feeding must be had, if attainable. Where intelligent, scrupulous care can be had, bottle-feeding may be undertaken with every prospect of success. To support the statements a number of statistics are given, of which only a few will be quoted:

"According to the report (1882) of the Infants' Hospital, Randall's Island [New York City], the death-rate of infants nourished at the breast was less than 16 per cent., while among those that were bottle-fed it was more than 75 per cent."

"The mortality of those suckled compared with those hand-fed was 19.2 to 53.9" [Glasgow].

"In Bavaria, where a nursing-mother is an exception, 50 per cent. die; while around Kronach, where nearly all children are nursed, only 25 per cent. die."

"At Rheims all are hand-fed, mortality 60.9 per cent.; at Lyons all are suckled, mortality 33.7 per cent."

Besides the high death-rate which artificial feeding produces, as it is ordinarily carried out among the poor and in institutions, there is another and not less serious result to be looked to,—viz., its influence on the development, future health, and usefulness of the children so fed.

"Of children in the hospital at Manchester, England, who had breast-milk alone to the ninth month or longer, and some to the age of two years, 62.6 per cent. were well developed and 14 per cent. badly developed. Of children exclusively fed by hand, 10 per cent. were well developed and 64 per cent. badly developed."

Bouchut found that rickets was remarkably more common in children not nursed.

The paramount importance of nursing during the first weeks is shown by the following figures, taken from the report (1876) of the Boston Board of Health, on infant mortality:

	Death-rate per 1000.
"One month and under	792.24
" " to two months	346.69
Two to three months	216 70
Three to four months	198.36

"Of 100,000 children, 13,825 died during the first three months, and 3649 during the succeeding six months."

One of the reasons why so many mothers have an insufficient milk-supply is the exhaustion consequent upon night-nursing. Women of average health and robustness, living in cities and large towns, should not attempt to nurse at night, nor even have the child in the same room with them. Most women not actually diseased can supply part nourishment at least. The deficiency may be made up by judicious hand-feeding. The notion that breast- and bottle-feeding should not be alternated or combined is not founded on fact.

When should a woman not nurse her child?

Pulmonary phthisis, well-marked scrofula, cancer, and epilepsy are contraindications to nursing. Women who are of a nervous temperament and who are easily excited will frequently have to be induced to give up nursing. When the mother's milk is clearly shown to disagree with the child, she should abstain from suckling. Acute illness of the mother does not always necessitate separating the child from the breast. In cases of contagious disease it is advisable to take the child from the breast if the mother will consent.

Wet-nursing, in its influence on infant mortality, is a two-edged sword, as the probability of death during the first year of life is materially increased in both the foster and wet-nurse's child as the consequence of the desertion of two children by their mothers.

"In Paris: Mortality of infants nursed by their mothers, 10 in 100; mortality of foster-children placed and watched over by Directory of Nurses, 29 in 100; mortality of foster-children placed and watched over by Directory of Nurses, 33 in 100."

"In Lyons, children nursed by their mothers, 21 in 100 die; children given out to nurse and watched over, 35 in 100 die."

This increased death-rate in foster over maternal-nursed children does not reveal all the evil done to the wet-nursed baby. "These children [nursed by mothers] were incomparably better looking and healthier than those who were intrusted to wet-nurses."

The causes of increased death-rate in foster-children is amply explained by the devious and irregular methods put in practice by nineteen-twentieths of these women. Wet-nurses frequently take stimulants to keep up their supply of milk, and often use narcotics themselves or administer them to the child secretly, especially if it is restless.

The milk of a hired nurse, whose passions, emotions, nervous organization, and whole constitution are totally different from those of the child's mother, often proves an unwholesome diet. While the milk of a wet-nurse may agree with her own child, it does not follow that another child will thrive upon it.

The mental condition of a wet-nurse has an influence upon the child that is well known,—viz., attacks of vomiting, diarrhœa, and colicky pain.

The transmission of disease, as syphilis and scrofula, by the wet-nurse, is often discovered when there has not been anything to arouse suspicion when the nurse was obtained.

The character of the nurse has an influence upon the future disposition of the child. The formation of character begins at birth, and the influences of the first year are of as much or, perhaps, more importance than any other in their lives. Dr. Winters ends by saying,—

"It has been said that wet-nurses are a necessary evil. I believe them to be an unnecessary and unmitigated evil; moreover, I believe, with certain rare exceptions, their employment should be suppressed."

Delthil: The Treatment of Diphtheria. The Analogy between Diphtheria in the Fowl and in the Human Being. (*Le Concours Méd.*, 1886.)

The treatment by evaporation of the essence of turpentine and fumigations with gas-tar and the essence of turpentine has resulted, in the inventor's experience, in one hundred and twenty-six cures out of one hundred and thirty-four who were treated. By virtue of its prophylactic properties there were only three cases of contagion, and those of a mild character, out of six hundred and seventy persons who attended the one hundred and thirty-four patients. In addition to the fumigations, M. Delthil was in the habit of making repeated local applications of the essence of turpentine. The author fixes the period of incubation of diphtheria at five days. The excretions which are obtained from diphtheria preserve their contagious character for more than a year. It is probable that diphtheria in the fowl is analogous to that in man, and that communication from one to the other is possible. The dung of the barn-yard may be the medium by which the morbid germs are diffused. The author admits that diphtheria is a disease which is primarily local, and that it may be developed in every part of the system, even in the intestine, also that it may develop several times in the same individual.

A. F. C.

Rosewater: Vaccination from a Syphilitic Child without Syphilitic Infection. (*Med. Record*, December 18, 1886.)

Dr. Fürth at the Polyclinic, in Vienna, vaccinated a number of children from the arm of a child who at the time was apparently healthy. Several days later the latter broke out with a syphilitic eruption. The children vaccinated from it had already been distributed to various points in the country, but Dr. Fürth, feeling the great responsibility resting upon him, took special pains to hunt up each child and keep it under observation for some time. Not one of the children vaccinated from the syphilitic child had syphilis or showed any signs of it during the several months that they were watched.

Therefore vaccination with pure lymph from a syphilitic child will not produce syphilis, and it is only when blood has been mixed with the lymph that syphilis is imparted in vaccination.

Mirjamoto: Modifications in the Weight of the Body among Children suffering from Intestinal Diseases. (*Rev. Mens. des Mal. de l'Enf.* [from *A. f. K.*, 1886], August, 1886.)

In this elaborate article the changes in the weight of the body have been studied in connection with the following diseases: (1) dyspepsia, ten cases; (2) intestinal catarrh, fifteen cases; (3) follicular enteritis, eight cases; (4) infantile cholera, six cases. The weights were taken regularly, morning and evening, daily for a period varying from five to thirty-five days. His conclusions are as follows: (1) In dyspepsia the normal increase of weight in the body is always interfered with. In mild cases the weight remains stationary, in severer cases there is diminution of weight, which in the author's cases averaged thirty-three grammes. (2) Intestinal catarrh exhibited a daily loss of weight, which varied between twenty-eight and six hundred and eight grammes. The author's cases lost on an average from one hundred and eighty to two hundred and fifty grammes daily. (3) In enteritis there is a very great loss of weight after the second or third day of the disease. This loss increases with the intensity of the fever. If a cure takes place rapidly the weight of the body will rapidly increase, while the contrary is true in cases in which convalescence is slow. (4) In infantile cholera there is the greatest loss of weight in a very short period of time. Even one-tenth of the entire weight may be lost within twenty-four hours.

A. F. C.

O'Callaghan, T. A.: Teeth in a New-Born Child. (*Med. Record*, November 21, 1886.)

Mrs. H. gave birth in January last to her seventh child, a large, healthy boy. Pain on nursing suggested to the mother an examination of the child's mouth, when she discovered the two lower incisors protruding from the jaw fully one-sixteenth of an inch. These two teeth still remain, are perfectly sound, and differ in no way from their companions which have since appeared, except that they are larger.

Soxhlet: Milk and Alimentation for Nursing Children. (*Rev. Mens. des Mal. de l'Enf.* [from *Müncher. Med. Woch.*, 1886], October, 1886.)

The author starts out with the principle which has been laid down by Lister, and more recently by Escherich, that milk is destitute of germs in the glands in which it is secreted. If, therefore, milk undergoes fermentation, it is because organisms which produce fermentation have reached it from without. In support of this hypothesis the well-known fact is cited that children which are suckled by their mothers are better developed than others, and rarely suffer from gastric troubles. Two principal factors obtain as to the introduction of the agents which cause infection of the milk: on the one hand we have the food which is supplied to the cows, some of which is especially rich in micro-organisms; and on the other there are the excrements which so often defile their stables, and which also depend in great measure upon the character of the food of the cows for the possession of their fermentescible agents. The more the milk is defiled by these excrementitous matters, the quicker will fermentation set in. Independently of these germs, there is another element which plays a considerable part in the fermentation of milk. This is found in the relatively high temperature to which milk is exposed which is to be used as food for infants. It has been experimentally shown that the lower the temperature the more restrained is the development and multiplication of inferior organisms. It may also be added that fermentation of milk is favored by turning into the fresh milk a portion of milk in which fermentation has already begun. The fermentation of milk is to be remedied by as complete a sterilization of it as possible, and the following method is suggested by the author: fresh milk is to be turned into flasks which are thoroughly cleaned and then closed with a rubber stopper. Under the stopper there should be an empty space of the volume of several centimetres. The flasks are then plunged up to the neck in a vessel of water under which an alcohol lamp is kept burning. After the water has reached the boiling-point and the milk has risen sufficiently in the flask, the rubber stopper is secured by means of a small glass cone. The water is then allowed to boil thirty or forty minutes longer. After this process has been repeated for two or three consecutive days a sterilized milk will be the result, which may be kept from three to four weeks without undergoing fermentation. This milk will have no harmful effect upon the digestive apparatus of infants, and constitutes a mode of alimentation far superior to ordinary artificial nourishment. A. F. C.

Hutchison (Glasgow): Pure Terebene in Winter Cough. (*Br. Med. Jour.*, 1886, vol. ii. page 15.)

The author gives the following conclusions after several months' use of pure terebene in winter cough and bronchitis. His experience included the treatment of fifty-one cases.

In chronic cases, with night cough, but not of a severe form, slight expectoration, and little disturbance to the general health, terebene will cure very quickly.

In chronic cases with emphysema, violent cough, difficult expectoration, shortness of breath, and general disturbance of the health, the drug must be used some time before an effect will be noticeable.

In cases of phthisis and catarrhal bronchitis the use of the drug was unsatisfactory.

It may be given in three- or four-drop doses, on sugar, three times daily, or it may be combined with cod-liver oil in the proportion of a drachm of terebene to two ounces of the oil. Its effect upon the stomach and bowels varies: with some it produces nausea, with others it acts as a laxative. It is very apt to give rise to a feeling of drowsiness, and, in some cases, to giddiness.

II.—MEDICINE.

Northrup: Laryngeal Diphtheria. Intubation of the Larynx. (*Med. Record*, December 11, 1886.)

The purpose of this interesting and practical paper is to show the workings of this new device for the relief of dyspnœa in the larynx, and some of the minutiæ employed to facilitate the introduction and withdrawal of the tube, together with other useful advice.

The Method of Inserting the Tube.—The child should be seated on the nurse's lap in an upright position, squarely facing the operator. It is the tendency to lean the child back somewhat, which should be avoided, as also not to throw the chin up, as is often done by the attendant, who usually holds the head while standing behind the nurse. The child should be enveloped in a blanket from its chin down, and the nurse should not encircle the chest with her arms, but should hold the elbows at the side. This allows the child room to breathe and the operator room to carry the handle of his instruments.

Having hooked up the epiglottis with the left index finger, the tendency is to carry the handle grasped in the right hand too far to the right side. The inserting and extracting instruments should be worked along the median line. Extraction is no doubt more difficult than insertion.

One point, both in inserting and extracting the tube, should be borne in mind: make the attempts short. It is better to try a half-dozen times by short dashes than to prolong one. Having engaged the end of the tube in the larynx, but little force is needed to sink it into place.

In preparing for the practice of intubation one is very much favored if he has a cadaver to study on,—inserting and removing and dissecting. After a sufficient practice the intubation of the live child is found much easier than that of the cadaver: the child instinctively raises the larynx, holds it firmly, closes the epiglottis tightly, and depresses the tongue. The position of the larynx is favorable, while the rigidity with which the epiglottis is held down often gives rise to the most embarrassing part of the proceedings. In order to raise the epiglottis, some thrust the index finger first into the beginning of the œsophagus and bring it forward till it encounters the edge of the œsophagus, and then hook it forward. Others strike at once upon its convex surface and pass to its edge. In children under two years it is often difficult to hook it up, on account of its bending on itself. Dr. N. suggests the exploration of the pharynx and hooking up of the epiglottis in well children in every-day practice. A frequent fault is made in the insertion of too small a tube. This is simply a piece of carelessness, as the size of the tube corresponding to the age can be gauged by the measure accompanying the instruments. The best practice is to put in the largest-sized tube that the age will admit.

There is not any danger of a tube slipping down into the trachea, even if a size or two too small. It does not ulcerate the vocal cords.

The tube is often coughed out, especially when the attempts to swallow food are made. Semi-solids are best, such as canned condensed milk, frozen milk, scrambled egg, corn-starch pudding. Professor Waxham uses a feeding-bottle and stomach-tube when the inability to swallow is too great. To swallow with the tube in takes the child a little time to learn. When the tube is coughed up or intentionally removed, there will follow a large piece of false membrane or a quantity of mucus. The child will breathe fairly well for three or four hours without it, or from the peculiar coarse vibration of the swollen and relaxed cords it may seem that the patient is suffering still from stenosis. Shall the tube be replaced? An examination of the chest will decide. If the air does not enter the air-cells well the tube should be put back again; if it does, it need not be unless the above indication occurs.

Prognosis? If complications do not occur after forty-eight hours, the prognosis is favorable. Do not shorten the time one hour, as the last eight hours often prove very treacherous.

There is one danger in intubation illustrated by one published case,—that of pushing tenacious tracheal pseudo-membrane before the entering tube and blocking the trachea. This unavoidable accident has never caused death, as far as known, but it threatens every reinsertion of the tube after the membrane has begun to soften and to be readily detached.

In considering the cause of death, the extent of the membrane and the condition of the lungs are of great importance.

Haidy: Different Forms and Complications of Scarlatina. (*L' Union Méd. du Can.* [from *Praticien*], May, 1886.)

The first form may be called *regular scarlatina;* its period of invasion being twenty-four to thirty-six hours, of eruption four to eight days, after which the patient gets well without accident. By the side of this variety is one in which the eruption is intensely red. It is to ordinary scarlatina as confluent is to simple variola, the temperature ranging at 40° C. and upward, and the pulse at 120 or thereabouts. Such cases are not infrequently fatal. A third form is the malignant one, in which are present delirium, contractions of the tendons, and coma. In the hemorrhagic form purpura and sometimes epistaxis are present. Then there is an abortive form of the disease in which the eruption is wanting, or lasts only a short time, so that it may be overlooked if the patient be not seen for several consecutive days. The complications of this disease may be divided into two series, those of the second and those of the third period of its history. First of all as a complication comes angina; this may be a pultaceous angina, in which there are deposits upon the anterior pillars of the fauces and the tonsils which resemble the curd of milk. This may be treated by local applications of citric acid, and gargles with a solution of lemon-juice. There is also the diphtheritic form of angina, which is characterized by the development of false membrane in the nares, the posterior pharyngeal region, upon the tonsils, and upon the pillars of the fauces. While this form is apt to be a fatal, it is not a common one, and it seldom attacks the larynx. The third form is gangrenous angina, which sometimes supplements the diphtheritic form.

It is not necessarily fatal, and the perforations of the palate which sometimes accompany it may heal in a few days.

The complication which is next in importance is arthritis. Occurring in the second period of the disease it presents the ordinary phenomena of arthritis, namely, swelling, redness, and pain. It seems to have an especial predilection for certain joints, for example, the wrist and elbow, and after these the shoulder and knee. Pericarditis may be associated with it, and the treatment which is indicated is salicylate of soda, the same as in ordinary cases of arthritis. Other complications which are less frequent are delirium, with a frequent pulse and high temperature, coma, and death, this being called the cerebral variety of complication. In another variety the patient is suddenly seized with suffocation and syncope, and dies in the course of a few minutes. The author does not believe that this is due to uræmia, as is commonly supposed. The two most noticeable phenomena in such cases are decided hyperthermia and extreme frequency of the pulse. Bronchitis and pneumonia are rare as complications in the second stage of the disease. In the third stage the most noticeable complications are coryza, otitis, and inflammations of the ganglia. Arthritis also occurs, but in a different form from that which appears in the second period, inasmuch as it often continues until suppuration has occurred. Albuminuria is a very common accident of this period, and with it hæmaturia may be associated, and œdema of the face and other parts of the body. The kidneys present, in fact, the evidences of general nephritis, from which recovery takes place in two-thirds of the cases. The only means of preventing this disease is the isolation of the well from the sick. One important point in connection with treatment has reference to the use of baths. The author prefers to do without them altogether until the period of desquamation is ended, and thus avoid all risk of chilling the surface.

A. F. C.

Smith, A. H.: A Malarial Affection simulating Basedow's Disease. (*Med. Rec.*, November 20, 1886.)

A lad eleven years of age found, while preparing for bed one evening, that the collar of his night-shirt seemed unusually tight. On looking into the mirror he perceived that his neck was considerably swollen. He was brought to the office the following morning. The swelling had nearly disappeared during the night, but a slight fulness of the thyroid gland could still be detected. At eight o'clock that evening the throat was found to be swollen again. The circumference of the neck, over the most prominent part of the swelling, was three-fourths of an inch greater than it had been in the morning. The swelling occupied the isthmus as well as the lobes of the thyroid gland. A loud systolic bruit was heard over the tumor. Pulse 110; marked palpitation. There was not any exophthalmus. Temperature, 101°. Spleen considerably enlarged. The following morning the neck had decreased in size to that of the previous morning. Temperature normal, pulse 98. Quinine was administered in full doses during the day. In the evening the swelling again increased, but to a less extent than the day before. After this there was a rapid subsidence of all the abnormal phenomena. A week or ten days elapsed, however, before the fulness in the neck entirely disappeared.

Filaton: Concerning the Independent Existence of Rubeola Scarlatinosa. (*Arch. f. Kinderh.*, Bd. viii. H. 4.)

Under this name (*rubeola scarlatinosa*) the earlier writers did not always describe the same morbid condition. Some of them recognized two forms of measles, one of which resembled ordinary measles (*rubeola morbillosa*), the other scarlet fever (*rubeola scarlatinosa*); others regarded under the name *rubeola scarlatinosa* simply mild cases of scarlatina, while yet others gave this name to doubtful cases of both measles and scarlet fever, in which the fever, the trouble with the throat, and the dropsy suggested scarlet fever, while the eruption suggested measles, or in which the eruption was confluent and suggestive of scarlet fever, while the trouble in the respiratory mucous membrane was such as obtains in measles. The author agrees with those who believe in two distinct forms of the disease, one of which, *rubeola morbillosa*, is well known and resembles measles; the other is less well known, *rubeola scarlatinosa*, and resembles scarlet fever. It is defined as an independent, acute, infectious, and contagious exanthematous disease, which is characterized by an eruption upon the skin which resembles that of scarlet fever, but which always runs a very mild course, and is to be differentiated from scarlet fever chiefly by the peculiarity of its contagion. The symptoms of this disease are identical with those of the mildest cases of scarlet fever,—namely, a pale red, confluent eruption upon the body and lateral portions of the face, very little redness of the throat, or other anginose symptoms, no fever, a duration of only a few hours for the eruption, with no subsequent desquamation, and a period of only two or three days for the entire history of the disease.

The text-books are silent with regard to any disease which presents this series of phenomena, but, notwithstanding this fact, the author believes that the disease has a separate and independent existence. It may be diagnosticated with confidence (1) when it is present, as well in children who have had measles as in those who have not had it; (2) when children who have had this disease sicken, after a time, with unmistakable measles. This disease is to be distinguished from the abortive form of measles in the fact that the former does not protect the patient from measles, as also, conversely, measles will not afford immunity from it. The same facts also obtain with respect to the scarlatinal form of this disease and true scarlatina; that is, an experience with one of them does not protect one against the other. The reasons why this disease is not described in the text-books are believed to be its mildness and its resemblance to scarlatina. A. F. C.

Holt: Broncho-Pneumonia; Unusually High Temperature. (*Med. Record,* November 27, 1886.)

A child, eleven months old, previously healthy, was attacked with broncho-pneumonia. For the first five days the temperature, when not reduced by antipyrin, ranged between 104° and 105° F. As the pulmonary signs at this time did not seem sufficient to explain the temperature, and as the spleen was very much enlarged, quinine was substituted for the antipyrin, four grains being given four times a day. This was stopped after two days, as the temperature rose in spite of the drug to 106.5° and then to 107° on the eighth day. This was brought down to 100° by two six-grain doses of antipyrin, given per rectum, four hours apart. During the next four days the temperature remained at 106°, unless artificially reduced. Antipyrin being required in too large doses, the temperature was controlled by putting the child in a bath of 100° and gradually cooling it down to 90° F.; the result being a loss of two or three degrees of heat. The effect rarely lasted more than three hours, so that the baths were repeated about once in four hours. During the last four days before death the temperature was lower, but reached 105° once a day. Death on the sixteenth day.

Autopsy.—Left lung, lower lobe, consolidation throughout greater part, and a considerable area at the apex. Several small abscesses were found on the side and a few at the apex of the right lung. The appearances elsewhere were those of a typical broncho-pneumonia.

Lehmann et al: Contributions to the Study of Tuberculosis. (*Gaz. Méd. de Paris,* 1886.)

Lehmann saw in 1879, in a Russian village, ten cases of tuberculosis in Jewish children, which was due to inoculation at the preputial wound following circumcision. The rabbi who had circumcised these children was suffering from tuberculosis in its last stage. In accordance with custom, he had sucked the wound in each case, after the operation, in order to stop the hemorrhage. In all the children the first evidences of tuberculosis appeared about ten days after circumcision had been performed. The preputial wound was surrounded with an ulcerated surface of a grayish color, which extended rapidly, and was associated with the enlargement of the inguinal gland. None of the subsequent symptoms warranted a suspicion of syphilitic infection. Two of the children died of tubercular meningitis; three others had chronic suppurative disorders and died of exhaustion; another succumbed to diphtheria; and two recovered. Ekenberg reports an instance of the same character. A child was circumcised by a rabbi on the eighth day from birth, and the wound was sucked as in the preceding cases. Instead of cicatrizing, the wound began to suppurate, and two months later the child's parents observed a swelling of the inguinal glands. When seen by the author the child presented an ulcer upon the extremity of the prepuce, which was covered with a yellowish exudation, the underlying tissues being deeply infiltrated. There was also infiltration of the frænum. A swelling in both groins, the left one being ulcerated, and all the infiltrated parts were very painful to the touch. Behind the left ear there was a fluctuating abscess. The lymphatic glands in other regions were not enlarged, and there was no trace of an eruption. There was nothing abnormal about the lungs and the alimentary canal. Shortly afterwards the child died, and a careful examination showed conclusively the tuberculous nature of his disease. Hofmoke has published many cases of tuberculous ulcerations similar to the foregoing, and Weichselbaum has found the *bacilli tuberculosi* many times at the seat of such ulcerations. Middeldorff reports a case of a boy sixteen years of age, of healthy parentage, who received a penetrating wound of the knee with an axe six weeks before he entered the hospital. The wound cicatrized in eight days, without inflammatory reaction, and the patient began to go about. Fifteen days after the accident the joint began to swell and became very painful. After admission into the hospital the entire knee was resected. The joint contained a small quantity of diffluent pus; the synovial capsule was transformed into a thickened mass, which showed under the microscope the presence of *bacilli tuberculosi.*

Müller has made a number of experiments upon animals, upon this subject, which consisted in injecting tuberculous material into the arteries, in order to find out whether tuberculous *fosi* would be developed in the bones. Experiments of this character made upon young kids resulted in the formation of lesions in the bones similar to the tuberculous lesions which are found in the bones in man. There were caseous and granular *fosi* in the narrow diffuse osteomyelitis with or without the formation of *sequestra,* and typical *fosi* in the articular extremities of the bones, with or without opening into the cavity of the joint. The evolution of the disease was the same as is observed in man. Fraenkel expresses himself as in accord with Cohnheim, in having demonstrated the presence of tubercles in the thyroid gland of all subjects who died from acute miliary tuberculosis.

Chiary concludes that tuberculosis of the thyroid gland appears now under the form of miliary nodosities, now the form of solitary or multiple of caseous nodosities, and exceptionally under the form of a tuberculous enlargement. The tubercles are distinguished by an abundance of giant cells and very few *bacilli* of a specific character. A. F. C.

Prior: The Relations between Chorea and Articular Rheumatism accompanied by Endocarditis. (*Rev. Mens. des Mal. de l'Enf.* [from *Berl. Klin. Wochen.*, No. 2, 1886], April, 1886.)

Ninety-two cases of chorea are analyzed in this paper, patients having been seen in the clinic of Rühl at Bonn. They are divided into three groups, the first including eighty-five cases in which there was no trace of cardiac disease nor of rheumatism. The second group consisted of one case, in which the chorea was accompanied by rheumatism.

A cardiac murmur preceded the chorea several months, and fifteen days before the chorea appeared the child complained of pain in the fingers and joints of the right hand. The third group comprised four cases of chorea which were complicated with heart-murmurs for a long time. In one of them mitral insufficiency had existed for a long time with no previous history of acute articular rheumatism.

The patient was a girl nine years of age. Two other girls eight years of age had a similar history. The fourth was a girl eighteen years of age, who had had for seven years a very painful swelling of the knee, ankle, and elbow-joints; her respiration was labored and she also suffered from palpitations.

Of the ninety-two cases of chorea, only five were complicated with cardiac disease; the conclusion is therefore reasonable that there is no rule or law as to the coincidence of chorea and endocarditis. In addition, chorea is seldom seen beyond the age of fifteen, while endocarditis often prevails between the ages of twenty and thirty. Chorea is most frequent among female children, rheumatism and endocarditis among males. Chorea is largely dependent upon an inherited tendency to nervous disorders, and salicylic acid has no influence upon its course. These facts make it plain that chorea is not developed under the influence of a cardiac disease or of a rheumatic diathesis. It is often of reflex origin, for example in hypertrophy of the heart, in cases in which the phrenic nerve is irritated mechanically. The infectious diseases, scarlatina, measles, typhoid fever, may also furnish the exciting cause for chorea. Should chorea occur consecutively to endocarditis, it is possible to consider the latter as a phase of acute articular rheumatism,—that is, as a phase of an infectious disease,—and also to consider that the chorea is caused by the same infectious agent which produces acute articular rheumatism.

The author has as yet seen no clinical proof that chorea is caused by capillary emboli; in fact, his conclusion in regard to the disease is that it is a necrosis without known anatomical localization. A. F. C.

Blachez: Purulent Pleurisy and its Treatment in Children. (*L' Union Méd. du Can.* [from *Concours Méd.*], September, 1886.)

If this form of pleurisy is somewhat common in childhood, it is partly because scarlatina is a very common disease at that period of life, and purulent effusion of the pleura often occurs as a complication of scarlatina. Pleurisy is sometimes purulent in infectious diseases from the beginning, and hence one should not believe that a purulent transformation is necessarily the result of a puncture. The author believes that if the puncture of the pleura has been properly performed it cannot cause a deposit to become purulent which would otherwise have remained serous. In accord with this view he advises that one should use for every operation a new needle or trocar, for however carefully the instruments may be cleansed, one is never sure that they have been absolutely sterilized. As a method of cleansing by heat, he suggests the introduction of the needle or trocar into alcohol and then setting the alcohol on fire. This method is much more effective than the use of carbolic acid solutions for cleansing purposes. The diagnosis of purulent pleurisy is not always a simple matter. In the absence of subcutaneous abscesses, which are sometimes developed in connection with pleuritic effusions, it is well to regard the smooth and shining condition of the skin on the side of the disease. This appearance of the skin only proves the abundance of the effusion, and not its purulent character, and the same is true as to the fluctuation within the intercostal cases. The general condition—that is, a condition of fever with cachexia and diarrhœa—points more directly than anything else to the presence of pus in the pleura. A pleurisy in a child which does not resolve at the end of three weeks is probably purulent. Purulent pleurisy in children sometimes gets well spontaneously. Exceptionally a cure may result by isolation of the purulent material and a granulo-fatty transformation of it; resorption occurring after a long time. If the pus has been evacuated, whether by a bronchial fistula or a cutaneous fistula between the ribs or at more distant points, recovery will often occur. As a rule it is not best to expect spontaneous recovery, but to make thoracentesis. Many cases are on record in which absolute cure has resulted from a single operation of this kind. As a rule, however, repeated punctures will be required, the quantity of pus obtained being less with each succeeding operation. If after five or six operations of this kind the patient is not cured, thoracotomy should be performed. The operation is not particularly dangerous, and should be followed by irrigation with disinfectant solutions. The author prefers for this purpose a one to one-thousandth solution of sublimate or a two to one-hundredth solution of boric acid. As the fever declines the irrigations are made with diminished frequency, until at length two to three times per week will suffice. The wound should be kept covered with several folds of carbolized gauze. The drainage-tubes must not be too long, and should be removed when the development of pus has reached its minimum. Alimentation should be as strengthening as the condition of the digestive function of the person will admit. The operation of thoracotomy is a painful one, but should be performed slowly. Many authors have objected to the administration of chloroform in performing it, but Blachez does not share in this objection. Local anæsthesia is exceedingly advisable for such cases, and if a stream of ether is directed upon the field of the incision it will enable one to operate without pain and with the necessary deliberation. A. F. C.

Seibert: Acute Primary Catarrh of the Stomach in Childhood. (*N. G. Med. Presse,* May, 1886.)

The most important symptoms in this disease are:

1. High fever which is sudden in its onset and its variations, excursions of five to seven degrees occurring within brief periods. In other cases the temperature is not particularly

high, remaining for several days in the vicinity of 102° F., after which it declines with a subsequent moderate rise, especially in the evening.

2. Swelling and tenderness of the abdomen, especially in the region of the stomach.

3. Eructation, hiccough, and yawning, followed by vomiting. The vomiting is attended with much effort and the discharge of a great quantity of undigested curdy masses, or colorless slimy material which is the result of the acute catarrhal process of the mucous membrane.

4. The stools are normal for the first twenty-four hours, and then diarrhœal in character and very offensive, especially in children who are not nourished at the breast.

5. Increased salivary secretions, coated tongue, and catarrh of the mucous membrane of the mouth.

6. Meningeal hyperæmia with all its accompanying phenomena, weakness, faintness, anxious countenance, groaning, crying, sleeplessness, delirium, and convulsions. If the convulsions form a very marked symptom, the probability of brain-disease is decided. In children of two years old and upward this symptom would be suggestive of possible typhoid fever. In reference to treatment, it is advised that for children under one year of age all nutriment should be withheld for twelve to eighteen hours, the stomach being thus allowed to rest and recuperate. Quinine has no beneficial effect upon the febrile condition in this disease. A. F. C.

Smith, J. Lewis: Absence of Right Lung; Malformation of Heart. (*Med. Record*, November 27, 1886.)

A negro child, when eight or ten days old, was taken sick with what was supposed to be pleurisy, but it was not possible to make it out satisfactorily. During the two months following the child thrived well, but died suddenly at the end of that period.

Autopsy.—The thoracic organs were removed, and consisted of a left lung with its usual division, the heart, and great vessels. Careful examination revealed, just at the aorta, a thin fragment of tissue, which did not, however, present any of the appearances of lung-substance. The trachea presented the usual bifurcation; the left bronchus can be traced into the lung, but the right is lost about one-fourth of an inch from the bifurcation. The heart had a large left ventricle, in the walls of which were three openings: one leading into the aorta, one into the left auricle, and one communicating with a small opening, supposed to be the right ventricle, as the right pulmonary artery entered a thin spot (the left could not be found), but upon following out the small opening it entered the left ventricle again. The course of the blood was as follows: coming from the venæ cavæ it poured into the right auricle, then into the left ventricle, thence into the aorta and rudimentary right ventricle, from the latter to the right pulmonary artery.

Peugniez: Hysteria in Children. (*L'Union Méd. du Can.* [from *Scalpel*], June, 1886.)

This author believes that hysteria is more common among children than has been usually supposed. It is rarely seen before the age of six to eight years, but within this period the largest number of cases are met with. The influence of menstruation in developing it in girls is believed to be inconsiderable. A singular case is narrated of a boy, who at five years of age began to show hysterical phenomena,—paroxysmal cough, chorea, hiccough, convulsions, and various forms of paralysis. Soon afterwards there were hallucinations, and a loss of memory, with inability to read, write, or cipher. He appeared to have forgotten his past life, and did not recognize his surroundings, with the exception that he knew his father and mother, and some of his brothers and sisters. Notwithstanding, he could guide his wagon, mount his horse, and say his prayers at the customary time. At the end of twenty days this amnesia suddenly disappeared, and past events as suddenly returned to his memory, with the ability to do the same things which he could and did do before his sickness came on. In the course of two years this series of phenomena was reproduced four times. The conclusion was that the amnesia was but the expression of an hysterical neurosis.

A. F. C.

III.—SURGERY.

Bayliss: Intussusception in Children. (*Amer. Jour. Obstet.*, November, 1886.)

In the July number of the above journal there is a paper upon this subject by Dr. Forrest (*Archives of Pediatrics*, September, 1886), in which he mentions a method of reducing cases of intussusception which proved very successful. Dr. Bayliss reports two cases successfully treated, with slight modifications of the apparatus. The first case, a female child, aged three years, had been suffering for ten days with some diarrhœa, but chiefly from frequent passages containing mucus and blood, accompanied by tenesmus. Within the last three days the bowel had protruded from half an inch to an inch from the anus. Paregoric and bromide were ordered until the necessary apparatus could be obtained. This consisted of a siphon [of some aerated water?], the gas of which was used, and a rectal tube, instead of a glass vaginal syringe, connected with the siphon by a rubber pipe about five feet in length, which allowed the working of the siphon at a little distance from the patient.

At the time the rectal tube was inserted the child was suffering intense pain. The tumor was reduced slowly and cautiously, and at its reduction the child wanted to go to sleep. On the morning of the next day it was apparently well, but in the afternoon it had returned, and the same method was resorted to with similar success. Recovered and remained well. It took one siphon in this case.

The second case, a female child, aged six years, had symptoms similar to the previous case, but they had existed only about one day. A tumor could be felt in the descending colon, but there had not been any protrusion from the anus. The child was given Dover's powder until she could be seen. The apparatus mentioned in the previous case was used, and in a very short time reduction was accomplished. By the following morning the symptoms had returned, and again the bowel was reduced in the same way. The day following the operation was resorted to twice, and on the day after once. On the evening after the last reduction the child became comatose and cold, but by giving stimulants it revived and recovered and remained well. This case required three siphons. A sedative was given after each reduction in both of these cases, and directions to be kept quiet and on the back.

Dr. Bayliss also reports the following case, in which a correct diagnosis was not made:

A male child, aged five years, had been having for the three preceding weeks colicky pains over the entire abdomen, so severe that he would cry out at intervals of a few minutes. The child had never been accustomed to masticate his food, always swallowing it whole. There was not any history of vomiting, and the bowels were said to be regular. On examination of the abdomen a long, hard, tumor-like swelling was found lying to the left, and on a level with the umbilicus. Calomel was ordered in small doses every two hours until the bowels moved freely. Two days afterwards the tumor had disappeared, and the child remained well for several days, until a neighbor gave him several cubes of green rhubarb, [pie-plant], which were bolted as usual. Soon the bowel pain reappeared, for which the mother gave several of the calomel powders. The following morning the patient was brought to the office, at which time the symptoms were the same as before, but still without constipation or vomiting. Bimeconate of morphia was given for the pain. In the evening the child was brought back. The abdomen was soft; there was not excessive pain, nor was there any tenderness. The tumor was distinctly felt in the transverse colon, over towards the left, and was about two inches long. The morphia was continued, and a poultice ordered to be retained until the patient was seen in the morning. In the morning the pain had almost entirely ceased, and the tumor appeared smaller and softer. Two days later the tumor was lower down on the right side, and not giving any pain.

From this time for a week or more he was better and worse alternately. The tumor would get larger, and again become smaller, while the stools, easily produced by different medicines, were soft and feculent, without blood or mucus. The child was attacked with whooping-cough, and after a very severe paroxysm fell back dead.

The diagnosis had been all along obstruction from fæcal masses, due to the child not masticating his food and to the different indigestible things given to him. The autopsy showed the cæcum gangrenous, lying in the first curve of the sigmoid flexure. The transverse colon was covered with recent lymph. The ileo-cæcal valve was patulous, and where the appendix probably had been was an ulceration extending through the bowel, so large that it was at the first glance taken to be the valve itself.

Simpson: Malformation of Rectum. (*Med. Record*, December 25, 1886.)

A new-born child had the following malformation of the rectum, which is not described by Holmes, Gross, Erichsen, and some other authors. The rectum was prolonged beyond the usual termination at the anus, across the perineum to the posterior border of the scrotum. It was attached by its upper surface to the median raphé, and presented a small orifice at its termination, through which meconium passed by dint of considerable straining on the part of the child. There did not appear to be any sphincter action to the opening, bits of fæcal matter remaining partly evacuated. An incision, made just anterior and down to the anus, and kept open by the daily passage of sounds for three weeks, effected a natural condition of the parts, the rest of the tube drying up into a small fibrous cord.

Pneumotomy, a Successful Case. (*Med. Record* [Editorial], December 18, 1886.)

A child, twelve years of age, entered the Hôpital Trousseau, Paris, with a history of having been ill for four years. A good-sized cavity was found in the lung of the right side. The child's expectoration was very fetid, and a gangrenous process was diagnosticated. Tubercular bacilli were not found in the sputa, and it was supposed that the cavity and gangrene had been produced by the breaking down of a broncho-pneumonic process, or of a suppurating interlobar pleurisy.

MM. Preugueber and De Beurmann made a U-shaped incision in a line with and below the lower angle of the scapula, down to the fifth or sixth ribs, two inches of each being removed after the periosteum had been carefully removed. At the bottom of the wound the lung could be seen to be adherent to the chest-wall. The lung was then penetrated by a thermo-cautery to the depth of three centimetres, where it entered a cavity, as was shown by the escape of fetid gas and secretions. The opening was enlarged so that a finger could be passed into the cavity. It was left to drain itself without any washing out or disinfection. The operation lasted three-quarters of an hour. No blood was lost.

By the end of the fourth day the communication of the cavity with the bronchi had closed. The cavity was then for the first time systematically washed out. At the end of three weeks the healing was not complete, nor had the fetor entirely disappeared, but the general condition of the patient was excellent, and showed plainly the efficacy of the operation.

Fifield: Dislocation of the Ribs Forward. (*Boston Med. and Surg. Journal,* November 11.)

A boy about eight years old, standing near a peddler's wagon, was thrown down by some children underneath the hind wheels; the horse started, and the wagon-wheel went over the child's left chest in front. Half an hour afterwards he was seen. There was then a dislocation of some three ribs (the exact ribs not stated), the cartilages lying behind. The child was described as having been very blue, livid, and gasping for breath shortly after the accident. When seen he was breathing with considerable ease, but upon any attempt to reduce the ribs he again grew livid, and respiration threatened to cease, so that the attempt was desisted from. He was kept in any position that was comfortable to him. Within three days the projecting ribs had almost entirely disappeared, and the cartilages had resumed very nearly their natural place.

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Original Communications.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

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METHODS OF STUDY, INSTRUMENTS, FŒTAL CIRCULATION.

A CORRECT knowledge of the anatomy, physiology, and general topography of the heart is essential to an intelligent study of its diseases.

The heart is a hollow viscus, whose function is to force the blood to all parts of the body. It is enclosed in the fibrous sac of the pericardium, which gives it fixation, as the cardiac apparatus is simply suspended in this sac by the large vessels which go to and arise from its base.

The pericardium is in shape an irregular pyramid, attached by its base to the centre of the diaphragm; tendinous bands indirectly attach it to the vertebral column; aponeurotic fibres

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also fix its apex to the sternum, vertebral column, and the hyoid bone.

This pericardial sac is situated in the median line of the thorax, between the two lungs and their covering, the pleuræ. The heart lies obliquely in this membrane, with its long axis downwards and towards the left. Its posterior boundary is the posterior mediastinum, being separated from the vertebræ by the trachea, descending aorta, intercostal artery and veins, greater vena azygos, thoracic duct, lymphatic glands, œsophagus, the two pneumogastrics, and both sympathetic nerves.

Anteriorly the heart and its coverings are separated from the sternum by connective tissue and the borders of the pleuræ. The heart in a child is somewhat higher in the thorax than that of an adult; its situation, based on several careful dissections, is about as follows: The auricles are on a line with the second intercostal space, the right extending beneath the sternum and almost to its right border. The right ventricle is beneath the sternum and to its left; its lower border is on a line with the head of the sixth costal cartilage. The left ventricle is situated between the third and fourth intercostal spaces and beneath the fourth rib. The position of the apex-beat differs materially from that in an adult, as will be seen by the accompanying table, based upon a series of examinations made by us in the Philadelphia Hospital.

The apex is much higher and nearer the nipple than is the case in an adult thorax; in a certain number of cases the nipple pulsates synchronously with the apex-beat; our investigations lead us to locate the apex-beat in the fourth interspace. A higher location of the apex may possibly be accounted for to some extent by the distention of the alimentary canal so often seen in young life, and also from the somewhat relatively larger size of the liver at this period of life. An examination of ninety-six boys for admittance to Girard College, made by one of us, served to further illustrate the fact that the apiceal impingement has a higher location in proportion to the decrease in the age of the child,—that is, in boys of six years it was generally found to be close to the nipple, whereas in boys of ten years its location was found to be from a half to an inch lower. The base of the heart cor-

Topography of the Heart; Apex-Beat.

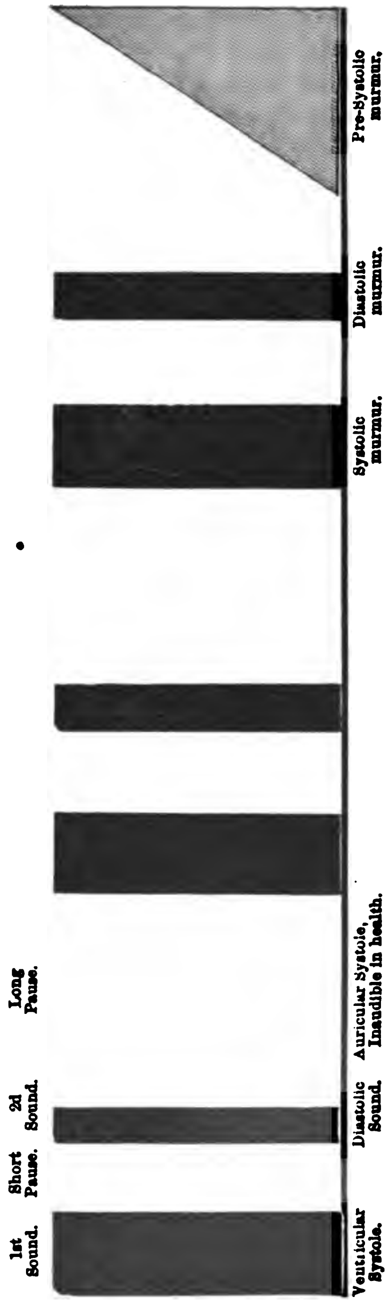
Name.	Age.	General Characteristics.	Previous Diseases.	Present Condition.	Pulse-Rate.	Position of Apex-Beat.	Heart-Sounds.	Remarks.
John Putney.	2 years.	Light hair, eyes, and complexion.	None.	Healthy.	145	On nipple line; ¾ in. below.	Clear and healthy.	Stomach and intestines distended.
Agnes Gallagher.	16 mos.	" "	"	Healthy; slight bronchitis.	140	On nipple line; 1 in. below.	" "	Stomach and intestines slightly distended.
Walter Clarke.	15 mos.	Dark hair, eyes, and complexion.	Malnutrition.	Anæmic.	Unable to count; restless.	Just below nipple.	Very valvular.	Nipple pulsates synchronously with apex-beat.
Frank Murry.	16 mos.	Light hair, eyes, and complexion.	Hereditary syphilis; disease of knee-joint; phimosis.	Weak and anæmic; syphilis in abeyance.	136	On nipple line; 1 in. below.	At apex first sound not healthy.	Spleen and liver enlarged.
Joseph Batty.	18 mos.	" "	Scrofula.	Glandular abscess.	160	⅛ in. to right of nipple line; ⅜ in. below.	Healthy (?)	
William Dresser.	18 mos.	" "	Anæmic.	Improved.	142	1 in. below nipple; ⅛ in. to right.	Healthy.	
Mary Jillard.	3 years.	" "	Scrofula.	Scrofula.	140	Immediately below nipple.	Healthy.	Nipple pulsates synchronously with apex-beat.

responds posteriorly to about the fifth dorsal vertebra. Much of the anterior surface of the heart is removed from the chest-wall by the lungs; the right lung extending to the mid-sternal line, and the left encroaching on a large proportion of the left ventricle,—in fact almost all of it except the extreme point,—hence but the tip of the left ventricle and the lower part of the right ventricle are accessible to the physical diagnostician, unembarrassed by the presence of pulmonary tissue. This topography constitutes an irregular triangle, and in order to describe a triangle three points are essential, and these are, first, the apex-beat, which is situated immediately below the nipple; second, the junction of the sternum with the xiphoid cartilage; third, the junction of the third left costal cartilage with the sternum. The heart is divided into four cavities, having four valvular openings. The latter all lie in close proximity to each other in a child, within a space less than half an inch square. The determination of the position of the valves is of paramount importance. From examinations of the cadaver we conclude that the mitral valve will usually be found at the left border of the sternum, on a level with the upper border of the third costal cartilage. More under the sternum, slightly in front, and a little lower, lies the tricuspid valve.

The valves of the pulmonary artery are situated opposite the lower margin of the second interspace; slightly lower, and in an oblique direction, is to be found the aortic opening. As will be seen by comparison with the known seat of these valves in adults, children present a slight upward and outward deviation of the entire cardiac apparatus.

Sounds.—The rhythmic action of the heart is divided into a systolic and a diastolic period. During the former active cardiac movements occur; during the latter the heart itself is quiescent, the systole being an action, the diastole a pause in such action. During this rhythmic action the sounds of the heart are made audible to the auscultator. It is during the systole that the *apex-beat* is to be seen and felt, that the ventricles are contracting, and the blood is streaming out of the aortic and pulmonary arteries, and that the mitral and tricuspid valves are closed, thus forming the *first sound,*—the complex sound,—the musculo-valvular sound; the muscular element being made apparent by the stroke of the heart against the chest-wall and by the audible contraction of the cardiac muscle. It is the long, low, dull boom. The *second*, or valvular, sound is short, clacking, abrupt, and ringing; it is almost purely valvular, and is due to the sudden closure of the semilunar valves, the aortic and pulmonary. While this is happening the blood is slowly finding its way from auricles to ventricles through the opened mitral and tricuspid valves in order to produce another systolic action. The aortic and pulmonary arteries at their origin, the chordæ tendineæ, and the whirl of blood in the ventricles severally assist in the production of the cardiac sounds. Just how much of it they contribute is as yet a moot question.

The sounds and pauses of the cardiac rhythm will perhaps be made clear by the accompanying diagrammatic representation with which we have been accus-



tomed to illustrate the matter to our classes. The heavily-shaded lines represent the first sound, the lighter the second; the long pause is represented by the greater length of the line, the short pause by the shorter line.

To recapitulate: the first, or systolic, sound represents the period during which the blood streams from the left ventricle to the aorta, and from the right ventricle to the pulmonary artery (closure of mitral and tricuspid valves, apex-beat, and carotid pulse).

The time elapsing between the first sound and the occurrence of the so-called diastolic sound,—the second,—is designated by the term *short pause.*

The *long pause* is the time during which the blood is finding its way through the pulmonary artery and lungs, by way of the pulmonary vein, into the left auricle, and from there into the left ventricle. It also represents the time required by the blood to traverse the systemic circulation and find its way back into the right auricle, and from there into the right ventricle. The diastole commences with the closure of the semilunar valves, aortic and pulmonary, and is terminated by the contraction of the two auricles, thus emptying themselves of blood and filling the ventricles, thereby aiding in producing another systole. The action of the auricles, their systole, is inaudible in health.

METHODS OF STUDY.

Suspected disease of the heart is to be determined by conjointly *inspecting*, *palpating*, *percussing*, and *ausculting* the præcordia and the superficial circulatory vessels.

Inspection.—In commencing the study of disease in the young, the little patient will at once present an obstacle by his unwillingness to be examined. While endeavoring to quiet the patient and allow his circulation to establish its equilibrium, it is well to note the history of the case. Has your patient had scarlatina, measles, rheumatism, or diseases with a known tendency towards the endo- or peri-cardium? Note the appearance of the capillary circulation, especially about the lips and finger-nails, the expression of the face, the presence of dropsy or anasarca, the respiratory functions, the existence of cough, the character of the respiratory action, and the condition of the alæ nasæ, together with the color of the mucous membranes. In children the præcordia is somewhat more bulging and apparent than in adults, as is also the depression at the lower part of the præcordial region. Neither of these signs, however, merit much consideration. A decided bulging would perhaps point towards hypertrophy or pericardial effusion, as a decided retraction would to a dense pericardial adhesion.

Inspection is of great utility in locating the position of the apex-beat. Its situation is, as has already been stated, somewhat higher than in the adult. All things being equal, it is more distinct in a lean child than in a plump one. Its point of impingement is not constant, changing somewhat with the movements of the patient and the condition of the alimentary canal.

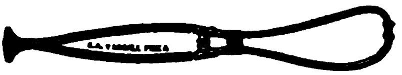
A boy aged fourteen in the medical wards of the Hospital of the University of Pennsylvania, who was an enormous eater and suffered from chronic slowness of digestion, with flatulent distention of the whole tract, would several hours after a full meal show an upward displacement of the apex-beat of one or more interspaces. It is also modified by the respiratory act, inspiration causing it to descend, expiration to become more distended and apparent. Many diseases also displace it, viz., hypertrophy, dilatation, pericardial effusion, pleural effusions, enlargements of the liver and spleen, and congenital abnormalities.

Palpation, on the whole, is perhaps more valuable to the clinician than is inspection. As stated when considering the subject of inspection, the apex-beat must be located as a landmark. This is generally best accomplished with the tips of the fingers, which are more sensitive than the ball of the thumb. In a healthy subject the apex-beat will be limited in area, well defined, and punctuated; that is, giving evidence of the first and second sound; the former a long, dull vibration, the latter a short and distinct impulse against the palpator's hand. Over the right ventricle, in a healthy subject, the finger should detect no considerable impulse, except after sudden muscular exertion or mental emotion; then the action is more of a rhythmic heave than a beat, augmented by the left lobe of the liver which adjoins the right ventricle of the heart through the interposing diaphragm. The apex-beat may have its rhythm interfered with by many conditions both within and without the circulatory apparatus: for example, in hypertrophy the extent and force of the beat is much augmented; in dilatation the beat is apparent over a much larger area than in health, but its force is very deficient. In pericardial effusion it is irregular, feeble, wavy, with a more or less upward displacement. A feeble apex-beat accompanies diseases of the brain, a vitiated condition of the blood, and general asthenic conditions. The to-and-fro motion of a roughened pericardium, sometimes styled cat's-tongue pericardium, will transmit to the hand a rubbing movement, as a valvular murmur will produce a peculiar thrill, styled by Laennec the purring tremor.

Percussion.—To percuss the heart of a child with accuracy is no easy task; it requires a certain amount of skill and a great deal of care. The general directions for eliciting cardiac percussion-dulness are about as follows: with the little patient preferably sitting up in bed, as the recumbent position would interfere with the correct approximation of outlines, the observer commences to percuss at the left mid-clavicular line, and proceeds downwards until a dull sound, together with a peculiar sensation transmitted to the finger, which will be appreciated at once by all who have attained any skill whatever in physical diagnosis, tells us that we have reached the upper border of the heart, which in a child will be about the upper border of the fourth costal cartilage, or possibly in the third interspace. This is the uppermost portion of the heart that is left free from lung encroachment. The transverse diameter of the heart is to be determined by percussing from the *right* side of the sternum, on a level with the fourth rib or interspace, directly across the bone. At about the left edge we meet with resistance and elicit a dull sound; we continue percussing until a clear note is once more brought out, in this way demonstrating the transverse cardiac dulness. Locating the apex-beat by palpation and inspection determines the lower margin of the heart, and we then have but the inferior surface to map out. This, however, is probably the most difficult and perplexing study that the physical diagnostician has to combat. It is only to be accomplished by appreciating the difference between hepatic and cardiac dulness, as at this point one merges into the other. The dulness due to the presence of the heart is not so absolute as that from hepatic tissue.

Percussion of the præcordia in children is, on the whole, unsatisfactory, as the space over which dulness may be elicited is so extremely small that were we to trust to percussion alone we could but conclude in many cases that the heart was altogether wanting. Many extraneous conditions alter the cardiac dulness. During inspiration and distention of air-vesicles the heart is covered over and somewhat removed from the chest. On the other hand, expiration enlarges the area of dulness very materially, especially upwards and laterally. In emphysema the dulness is permanently diminished, and is permanently increased by diseases of the heart and pericardium. Later in our study we will compare the adult præcordia with that already given.

Auscultation.—In the young this is perhaps the most satisfactory manner of examining the heart. Auscultation may be practised either by the *mediate* or the *immediate* method, in the former using the stethoscope, and in the latter applying the ear directly to the chest. The stethoscopes before the medical man of to-day are legion, as are their form, shape, design, and applicability. On the whole, however, the most generally satisfactory instruments are those that are simple in construction and light in texture. The light gun-metal mon-aural instrument, with detachable ear-piece, introduced by Hawksley, is undoubtedly the best for every-day use; and if the auscultator possesses a double stethoscope, as seen in the accompanying figure, and described by one of us in the *Medical News*, November 7, 1885,* he will be fully prepared, as far as



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* A New Binaural Stethoscope, by William A. Edwards, M.D.

instruments go, to elucidate the most intricate problems in physical diagnosis. In the auscultation of children it is well to remember the following aphorisms: Your patient and yourself are to be in a position that will not be constrained or uncomfortable, and will permit of a ready application of the ear or stethoscope to the region under investigation. The chest should be bare, and the stethoscope applied closely and accurately to the integument. The auscultator's head must not be too low. This is absolutely essential.

Instruct your patient, if old enough, to inspire, expire, and hold the breath; also auscult during full-held inspiration and expiration.

Following the foregoing rules, one will be able to detect two sounds very dissimilar in character; one will be low, dull, booming, and giving the impression as occurring close to the ear,—the so-called first sound; the other is short, abrupt, ringing or flapping,—the second sound. These two sounds in children are audible over the entire præcordia, and in fact over most of the costal framework. Certain regions of the chest have been selected at which the individual component elements of these sounds may be heard with maximum intensity, viz., the play of the mitral valve is best heard just over the apex-beat, no matter what its situation; the tricuspid sound is best made out in the vicinity of, and slightly above, the ensiform cartilage. In this region diseases of the right ventricle are also to be studied. The second costal cartilage on the right of the sternum has been designated "the aortic cartilage." At this point the aortic valves are to be auscultated.

The sounds of the pulmonary artery are to be sought for in the second intercostal space, near the left edge of the sternum. As before stated, the cardiac apparatus is situated somewhat higher in the very young, hence we, in these cases, place our landmarks somewhat higher. A point worthy of remembrance, more particularly to the young auscultator, is the fact that both the first and the second sounds are to be heard at each of the points above stated; but the sounds vary with the different situations. The practical fact to remember is that the sounds have their maximum intensity and clearness over the seat of production. The sounds are variously modified by many conditions. They may be changed in rhythm, in character, and in transmission. The latter element, even in the most healthy states, is very diversified.

Full inspiration lessens the sounds very materially, as full expiration increases the extent over which they may be heard. The first sound is probably more liable to undergo change than the second, as in children the general systemic conditions which aid in altering the second sound are not so apt to be present; as, for instance, the altered blood conditions of lithiasis, or gout, with increased arterial tension. Both of the sounds may be obscure or distant, or the periods of silence, the long and short pause, may be changed in rhythm. Again, the sounds may intermit, or, what is more unusual in early life, a reduplication of the sounds may occur; one or both may be double, or one alone may be doubled over a certain part of the præcordia, and not over another. In some rare cases the heart presents four sounds, more usually, however, three, and the second sound is probably the one most frequently reduplicated.

This anomalous action is of little practical value to the diagnostician. Its cause is the want of synchronous action between the left and the right heart.

THE FŒTAL CIRCULATION.

Certain differences exist between the fœtal and adult heart, a correct understanding of which is essential before congenital diseases and malformation of the heart can be appreciated.

The two sides of the fœtal heart communicate one with the other. In the adult all the venous blood is carried from the right ventricle to the lungs *via* the pulmonary artery, in order to eliminate effete matter and receive oxygen. In the fœtus this mechanism does not pertain, as only enough blood is passed through the pulmonary arteries to maintain their calibre, so that they will be in condition to carry the blood to the lungs immediately after birth.

In examining the fœtal auricles an inter-auricular communication will be found to exist, arranged in such a manner as to permit the blood running into the right auricle to pass into the left, but not in a contrary direction. This *foramen* *ovale* plays an important rôle in congenital heart-disease. By reflecting a moment we will see that an appreciable quantity of the fœtal blood, after reaching the right auricle, does not, as in the adult, find its way into the right ventricle, but through the foramen ovale into the right auricle.

Notwithstanding this arrangement to prevent the right ventricle from receiving more blood than enough to keep the pulmonary artery patulous, it still receives too large a quantity; hence nature has provided a vessel peculiar to the fœtus, the *ductus arteriosus*, arising from the point of bifurcation of the pulmonary artery and opening into the arch of the aorta, in this way allowing but a small proportion of the blood to find its way along the pulmonary artery and into the lungs.

In order that the fœtus may get rid of its impure blood, nature has prolonged the fœtal hypogastric arteries into two large arterial trunks, which pass into the cord, and are then styled *the umbilical arteries*, and carry the impure blood to the placenta for renewal. The *single* umbilical *vein* receives the pure blood and carries it to the under surface of the liver, where it is turned into another special fœtal vessel, the *ductus venosus*, and emptied into the ascending vena cava, and from this vessel into the right auricle.

To secure a more correct understanding of the fœtal circulation, it is perhaps better to trace it from the entrance of the blood through the umbilical vein to the under surface of the liver. This viscus receives but a small part of it; the great mass is thrown into the vena cava through the ductus venosus. The cava also receives the blood which has circulated in the lower extremities of the fœtus, and that blood which has circulated through the liver. This blood, mixed in quality, is carried to the right auricle, and the major part of it is at once carried to the left auricle *via* the foramen ovale. From the auricle it is directed into the left ventricle, whose systole sends the greater part of it into the head and upper extremities through the aorta; but a small portion is sent to the lower extremities. The blood which has been distributed to the upper part of the body is returned to the superior vena cava, and is then emptied into the right auricle, and from here the largest quantity of the blood is thrown into the right ventricle, whose systole propels it into the pulmonary artery and through the ductus arteriosus into the descending aorta.

It is thus seen that some of the blood in the descending aorta, which is to be conveyed to the lower extremities, has already circulated through the head and upper extremities; but the greater part of the blood in the descending aorta is carried for purification to the placenta through the umbilical arteries.

At birth the circulation must at once change from the conditions that were adaptable to the uterine environment to that which will support the life and vitality of a separate organism.

The *establishment of independent circulation* takes place as soon as the child is born. The first act of the new-born babe is a lusty cry which inflates the lungs, and, in consequence, dilates the pulmonary arteries. As a sequence, the greater part of the blood in the right ventricle is at once distributed to the lungs, where it becomes changed from venous to arterial blood, and is returned through the pulmonary veins to the left auricle. The left auricle now receives more blood than it has been accustomed to, the right less, and, owing to arrest of the placental circulation, the umbilical veins are inactive. We now find that the pressure of the blood in the two auricles is equalized, which aids in the closure of the foramen ovale. The blood no longer finds its way from right to left auricle, but into the right ventricle, and thence to the pulmonary artery. The ductus arteriosus becomes impervious, and soon collapses. The blood in the descending aorta does not find its way into the hypogastric arteries, but directly into the lower extremities, and adult circulation is established.

CONGENITAL DISEASES OF THE HEART, MALFORMATION, CYANOSIS.

The circulatory apparatus at the beginning of embryonic life is represented simply by a few cells; pulsations in the human embryo appear towards the fifth day (Paul).

Coste has had the good fortune to study the human heart at the second week of uterine life. Authors differ as to whether the heart is first simply a straight tube or spindle-shaped pouch; at all events its earliest trace is simply a thickening of the intestinal fibrous layer of the fore part of the alimentary canal. At two weeks the heart has become curved like the letter S, the posterior part of the tube rests on the dorsal surface of the anterior part; the upper or anterior extremity forms connection with the arterial branches, and will ultimately furnish the aortic arches; the posterior part receives the omphalo-mesenteric veins. As growth progresses the curves in the letter S increase, and shallow indentations become more apparent. These mark the first division of the organ into auricles and ventricles. The first indentation represents the auricles into which the veins are running, the middle the ventricles, and the lower or third portion the common arterial trunk. Before the cardiac apparatus assumes the S-like form the primitive auricles are the larger; but a little later the ventricles become much the largest. At the end of the second week the heart is still simply a hollow, twisted tube, the blood entering by the veins, and finding its exit by the arteries, the auricles and ventricles simply forming a common chamber. The exact method by which the auriculo-ventricular septum is evolved is as yet not clearly demonstrated. At the fourth week the heart is divided into halves, a left, or arterial, and a right, or venous, half. The common arterial trunk is now separated into what will eventually form the aortic and pulmonary artery. At about the third month the auriculo-ventricular septum is completely formed, as is also the septum ventriculorum dividing the right and the left ventricles. The septum dividing the auricles is now entirely completed except that portion which will form the foramen ovale, and will be closed in a manner to be described hereafter. The fœtal heart, after about the first month, has a more or less rectangular outline, the auricular appendages overhanging the ventricles. The manner of the formation of the aorta and pulmonary artery cannot better be described than in the words of Rokitansky, quoted by Longstreth: "These two vessels have their origin in the common arterial trunk, which divides into the permanent aorta and pulmonary artery, to be completed about the eighth week. A little swelling appears in the common trunk, which does not grow in a straight line through the lumen of the common trunk, but in such a manner that the forming septum makes a concavity posteriorly towards the aorta, and a convexity anteriorly towards the pulmonary; thus on cross-section the aorta has the outline of the gibbous moon, the pulmonary fitting into it separated by the septum of a new moon. The septum ventriculorum, starting at the base of the ventricles from the fibrous ring of the auriculo-ventricular orifice (having already been built upward from the future apex of the heart), originates at a point on the posterior wall of the common ventricular cavity in exact correspondence with the starting-point of the little swelling on the inner surface of the common arterial trunk. The two septa are thus formed in apposition, and the structure of the septum ventriculorum is so far advanced that by the eighth week the vascular trunks are connected with the proper ventricles, but the septum ventriculorum does not close completely until about the twelfth week."

Having hastily reviewed the development of the human heart, let us for a moment consider the changes which take place in the vascular arrangement of the fœtus after birth, as it is to an abnormality or arrest of these changes that many cases of so-called congenital heart-disease are due. The ductus arteriosus collapses soon after birth; the vessel contracts by its own inherent contractility, and from the loss of the column of blood which formerly passed through it, the mass of the blood now going to the lungs. Some interesting observations on this structure were made by J. Collins Warren before the Philadelphia Pathological Society in October, 1885.

His investigations lead him to conclude that the ductus arteriosus at the time of birth in certain important respects differs in structure from the aorta and pulmonary artery. The media is much thicker than in either of these vessels; it is thrown into irregular folds, which are increased at the time of birth. The outlines between the different layers are less marked than in the walls of other vessels. The lamina elastica is indistinct, and in places apparently wanting. The media consists chiefly of longitudinal layers of muscular fibre, a few circular bundles existing in the outermost layers. A few weeks after birth the greater portion of the walls of the ductus undergo hyaline degeneration, the outer or circular fibres of the media alone remaining. There is at this time an active growth of long, spindle-shaped cells, with staff-shaped nuclei at the edge of the media bordering on the opening into the aorta; there is also thickening of the intima. Eventually the hyaline tissue becomes absorbed, and is replaced by a band of fibres continuous at each end with the media of the large vessels. At the aortic end, in a longitudinal section, the media is seen slightly separated at the point of the cicatrix, and between the two and continuous with them are the longitudinal fibres of the ligamentum arteriosum. In the centre of the depression marking the site of the cicatrix a small vessel is given off into the axis of the ligament, where it either loses itself in a capillary network or becomes continuous with a similar vessel coming from the pulmonary artery.

Dr. W. S. Forbes would add as a cause of closure of the ductus arteriosus the traction exerted by the descent of the diaphragm upon the fibrous bands extending from the tendinous centre of the muscle to the aortic arch.

The foramen ovale soon becomes permanently closed, probably by contracting adhesions to the edges of the aperture. The umbilical arteries and veins and the ductus venosus speedily collapse and become impervious. Any one of these structures may remain pervious and constitute some of the circulatory anomalies due to arrested development or want of proper completion in the stages of change from fœtal to adult circulation.

Attempts have been made for the last thirty years to classify the circulatory anomalies and malformations into a convenient working form, so that cases may be arranged under this or that heading, with, however, but meagre success. Peacock's classification, a fairly good one, is as follows:

1. Arrest of development early in fœtal life (fourth to sixth week; heart with two or three cavities; single or imperfectly divided arterial trunk).

2. Arrest at a later period (sixth to twelfth week; imperfect auricular or ventricular septum; imperfect or misplaced vessels).

3. Those after the third fœtal month (closure and patency of fœtal passages; irregularities of valves, cavities, etc.).

We agree with Longstreth, that could a classification be based on the seat of the disease alone it would simplify the study of these cases to a great degree,—in fact, be as simple as the study of adult valvular disease; but this, unfortunately, if carried out, would, owing to the varieties in the morbid processes, lead us to greater chaos than ever, so that on the whole it is perhaps wiser to divide the subject under two grand headings,—(1) the primary malformation, (2) and their secondary effects.

The foramen ovale.—As stated above, the auricles shortly after birth are no longer intercommunicating, owing to the closure of the valve. This, however, is not always the case, as the valve may fail to adhere, there may be perforations or slits in its leaflets, or the opening may be so disproportionate in size that the valves will not make it impervious. At times this opening is so large that but little inter-auricular septum exists at all. Some observers state that the valve is never completely obliterated until the eighteenth month or second year of extra-uterine life. We occasionally meet with cases on the post-mortem table in which there is an anatomical defect in the foramen, but in which there is perfect physiological action. Such a case was examined by us in the Philadelphia Hospital. The child was aged four, and had presented during life no evidence of cardiac or circulatory disturbance. Death was caused by acute enterocolitis. In front of and slightly above the fossa ovale was seen the so-called valve of Vieussens, which is a simple muscular projection, with its concavity looking posteriorly and inferiorly. This was continuous below with the Eustachian valve. The proper adherence of these two structures would have closed the foramen ovale. The two arches in our case crossed like the blades of scissors, and admitted the passage of a small, flat instrument from the right to the left auricle; but at the moment of auricular systole the blades of the scissors, so to speak, were accurately applied one to the other, and, consequently, no admixture of the venous and arterial blood was possible. It seems to be a fact that defects of the foramen ovale are more common in females than in males. It also seems to be established that most cases of patency of foramen ovale are to be classified under the second division of our subject,—*i.e.*, secondary effects. This, of course, excludes those cases presenting slits or perforations in the valves.

In many cases the patulous foramen is secondary to defects in the mitral valve, allowing regurgitation or obstruction in the large arterial trunks, aorta, and pulmonary artery. A patulous foramen is more frequently associated with obstruction or narrowing of the pulmonary artery. Narrowing of the tricuspid orifice would also be a direct cause of patulous foramen ovale, but primary defect in the tricuspid orifice, causing narrowing or stenosis, is very rare; in fact, it is rare that we see it even in combination with other defects. It may be, and generally is, due to narrowing of the pulmonary artery. As a rule the direction of the blood-current in cases of patulous foramen ovale is the same as that during fœtal life,—*i.e.*, from right to left auricle,—but cases have been noted in which the direction of the blood-current was directly opposite from that which pertains during intra-uterine life,—*i.e.*, from left to right.

Premature closure of the foramen ovale.—This is of very rare occurrence. In these cases, as one would expect, the right side of the heart is unduly developed and the left atrophied. The blood during fœtal life is of necessity all transmitted through the right cavities, the pulmonary artery, and duct. To Vieussens is due the credit of first recording such a case.

Patent septum ventriculorum.—An abnormal communication may also exist between the two ventricles greater or less in degree; in some cases almost the entire septum may be absent; as a rule, however, a small opening is found in the *pars membranacea*, or *undefended part*, which is that portion of the septum that is practically simply a membrauous partition between the ventricles. The openings may be multiple. Three have been recorded.

This again is rarely a primary malformation, but usually follows defects in the pulmonary circuit; the septum normally closes a little before the twelfth week, hence a patulous condition would indicate an abnormality early in fœtal life. The blood-current is usually from left to right; it, however, may be reversed, as we saw in cases of auricular communication.

The pulmonary artery and valves: narrowing stenosis or atresia (with closed ventricular septum).—This is a somewhat frequent defect; the atresia varies in degree from simple narrowing to complete closure; as a rule, the greater the stenosis and thinning of arterial wall the earlier did the defect arise.

The foramen ovale, as above stated, is generally patulous, as is also the ductus arteriosus. In cases of atresia the right ventricle will be found markedly decreased in size; in cases of stenosis the ventricle is generally in a condition of dilated hypertrophy.

Stenosis and atresia (with open septum ventriculorum).—This condition is considered by many competent authorities to be the most frequent malformation of the heart. The narrowing or stenosis may be observed at any point from the valves to the bifurcation of the artery; it is, however, generally most noticeable at the orifice. The vessel-walls may be extremely thin, and the vessel itself somewhat shrunken.

In complete atresia one of two conditions will be met with: either the valves alone are closed, accompanied by a narrowing of the vessel calibre, or the vessel itself, from orifice to bifurcation, is changed into a cord. Many secondary changes are to be noted. Right auricular and ventricular hypertrophy, with dilatation and altered tricuspid leaflets, is not infrequently combined with the stenosis and atresia; the left ventricle being smaller than normal, the shape of the heart is changed.

The aorta may be increased in size and the mitral valves altered by morbid changes.

The fact that the septum ventriculorum remains open explains the mechanism by which the circulation is maintained, the blood finding its way through the patulous septum into the left ventricle.

The foramen ovale and ductus arteriosus in some cases are closed, in others open. In about thirteen per cent. of all cases the ductus arteriosus was found to be entirely absent.

The pulmonary artery valves may present congenital numerical abnormalities, being either excessive or deficient in number and conformation.

More than the normal number of valves has but little clinical significance; but a lessened number is decidedly important in prognostic significance of later life, as, if there be but two valves, there is great probability of insufficiency, permitting regurgitation, arising during adult life.

If there be but *one* valve, with ill-defined markings, showing attempts at division, the probabilities are that obstruction will arise.

The valves may be entirely absent, or there may be simply a diaphragm separating the orifice from the ventricle.

The tricuspid valve and orifice.—This, again, is a situation in which we rarely encounter primary abnormalities, although it is often indeed difficult to say whether they are primary or secondary.

The valve may be very imperfect, allowing regurgitation, or there may be stenosis or atresia, due to adhesion of the leaflets or contraction of the connective tissue. In some cases the valve has been seen stretched across the orifice like a little diaphragm; there is usually a small opening in its centre, through which the blood is able to find its way; in other cases the orifice and valve have failed to develop, appearing shrunken or shrivelled; the entire right ventricle in these cases has not undergone the proper amount of development. The pulmonary artery is also usually insufficiently developed, with narrowing of the pulmonary conus. The foramen ovale and the ductus arteriosus may both remain patulous. Having now considered the right side of the heart and its defects, we will consider *defects in the left side of the heart.* Congenital primary defects are relatively much less frequent in the left heart than in the right. Defects in the aorta and its valves are perhaps more frequently met with than defects in the mitral valve or orifice.

The aorta has been noted in a condition much narrower than normal; this is a true primary defect, due to unequal division of the truncus arteriosus communis.

Narrowing of the aortic conus may originate late in fœtal life from an endocarditis, similar to that seen in extra-uterine life. In these cases the mitral curtains will generally be implicated in the process, as will also the aortic valves.

The left ventricle may be either in a condition of simple hypertrophy or one of dilated hypertrophy, or it may be shrivelled and shrunken, as was the right ventricle in similar affections of its outlet.

Should the aortic stenosis arise early in the fœtal life other secondary effects will be noted, not, however, as marked as were those in the right heart. The auricular or ventricular septa may be patulous; the aortic valves may be but two in number, or firm bands may form beneath the aortic orifice. The mitral orifice is much less frequently affected than the aortic. This is the rule also in the right side of the heart, the pulmonary being more frequently affected than the tricuspid.

Transposition and malformation of the great vessels.—Unequal division of the common trunk has already been noted under pulmonary and aortic stenosis or atresia.

The transposition may be of two varieties: the vessels may communicate with the wrong ventricle but their relative positions to each other may be normal, or they may communicate with the wrong ventricle and be transposed in their relations to each other; this latter defect arises very early in fœtal life, and is attended with many secondary defects.

The common trunk at its beginning may fail to completely divide, and the blood of the aorta is allowed to mingle with that in the pulmonary artery; in all these cases we are likely to note a deficiency in the ventricular septum and other abnormalities. In these cases the heart is not infrequently *displaced* in the chest.

Transposition of the aortic and pulmonary arteries has been a well-recognized congenital defect for a number of years; indeed, the first case was recorded so early as 1797, by Dr. Baillie, and the specimen still exists in the Royal College of Physicians.

The descending aorta may be given off from the pulmonary artery through the ductus arteriosus. This is generally caused by imperfect development of the aorta between the origin of the left subclavian artery and the duct, as a consequence sufficient blood is not carried from the ascending to the descending aorta. These cases are seen on the post-mortem table, advanced in years, with an obliteration of the aorta beyond the left subclavian artery, the circulation being maintained through collateral channels. Such a case is recorded by Steidelle.

Transposition of the venous trunks.—In these anomalies the foramen ovale remains pervious of course, allowing the venous and arterial blood to mingle; this to a certain extent overcomes the anomalous arrangement of the venous trunks, as persons have reached a fairly advanced age under conditions of transposed venous trunks.

The ductus arteriosus.—The closure of this structure commences normally at the aortic extremity, and is usually, according to Billard, not entirely closed until fourteen days after birth.* It may not close until twenty-one or thirty days after birth. The pulmonary extremity may remain pervious for a longer time; if the closure commences at the pulmonary extremity, it is as a rule due to cardiac abnormality and reverse blood-current.

Cases are recorded in which the duct is totally impervious, others where it is partly open, and again others in which the entire structure is wanting, and in other cases two ducts have been found; a distinct duct has been recorded as arising from the right ventricle. It has been noted in a state of great dilatation.

Premature closure of the duct is in reality a defective development, or absence, of the duct. In many cases the pulmonary orifice is so narrowed that the duct is apparently closed. If the pulmonary orifice is closed the duct remains patulous. The blood from the right heart, to reach the lungs, must pass through the foramen ovale or through the ventricular septum. A patulous duct is usually seen in case of transposed vessels, as above recorded, or when the descending aorta is markedly narrowed.

Numerical auriculo-ventricular anomalies.—A supernumerary ventricle may exist on the right side. They have been met with of various sizes. The defect is in all probability due to inflammation of the fœtal endo- and myocardium, together with hypertrophy of the muscular bands close to the conus arteriosus dexter. Fenton records a heart with five cavities. The *cor biloculare* is a heart consisting of but two cavities, one auricle and one ventricle. The *cor triloculare biatriatum* is the association of a single ventricle with two auricles. On the other hand, the *cor triloculare biventriculare* is a double ventricle and a single auricle.

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* For manner of closure see observations of J. Collins Warren, page 79 of this article.

As an interesting example of these numerical abnormalities we would cite the case reported by Brewer in *Boston Med. and Surg. Reporter* (*Weekly Med. Review*, October 17, 1885). At the Columbia Lying-in Hospital in Washington a healthy colored woman was delivered of a male child. At the time of birth the child was cyanosed, and it was only after the employment of artificial respiration and various other stimulating measures that respiration was established. The child lived fifty-four hours, during which time embarrassment of respiration, rapidity of pulse, and great restlessness were constantly observed. The efforts at nursing were feeble and without result.

At the autopsy the heart alone was removed and preserved for subsequent examination. The lungs and abdominal organs were examined *in situ*. The former were well aerated, and the latter presented nothing abnormal. Upon later investigation the heart was found to consist of three cavities, two auricles and one ventricle. The auricles were well formed, but of unequal size, the left being considerably enlarged. The septum was present, and exhibited nothing abnormal except the large size of the foramen ovale, which admitted the tip of the little finger. There was but one, the left auriculo-ventricular, opening. In place of the tricuspid valve there was a slight depression, at the bottom of which was a minute fibrous ring, three mm. in diameter. This was impervious, and an opening made through it in search of a rudimentary right ventricle revealed nothing but the dense muscular tissue of the ventricular wall.

The ventricular portion of the heart did not differ in size and external appearance from normal specimens of the same age. The walls were somewhat hypertrophied, measuring nine mm. in thickness. Its cavity was spacious, and presented no trace of a septum; from it was given off one large arterial trunk, the aorta. A small vessel, blindly originating at the junction of the anterior wall of the aorta with the ventricle, measuring three mm. in diameter, bifurcating eight mm. above its origin, was observed and considered by Dr. D. S. Lamb, of the Army Medical Museum, to be the rudimentary pulmonary artery. As the autopsy was necessarily hurried, further investigation, with a view of ascertaining the origin of the vessels supplying the lungs, was not undertaken.

"Although the specimen exhibits three distinct cavities, considered from a physiological point of view, it should be classed as a bilocular heart, inasmuch as the right auricle, having no connection with the ventricle, serves only as a common venous trunk.

"Examples of trilocular hearts are by no means common. Peacock, in 1858, had collected but eleven, and the American and British journals published since that time furnish an additional record of seven cases. Most of these, however, are examples of an arrest of development taking place at a period of fœtal life much later than the case which is now under consideration. Evidence of this is to be found in the fact that in nearly every instance a rudimentary ventricular septum is present, and the pulmonary artery, in a more or less complete state of development, can generally be found to communicate with the ventricle.

"Of the few cases which closely resemble this one can be mentioned the one reported by C. Bernhard, in which there was entire absence of auricular septum, right ventricle, and pulmonary arteries; two cases (reported by Owen and Vernon) in which there was absence of left ventricle and aorta, the auricular septum being defective; and the case described by Heinman in the *Medical Record* of 1878, which consisted of two auricles and one (the left) ventricle, the aorta being well formed and the pulmonary artery rudimentary and impervious."

These three latter numerical defects are, as a rule, associated with abnormalities of the pulmonary artery or orifice. That presenting a single auricle is in reality a deficient closure of the foramen ovale; but the hearts thus deformed, as a general rule, present many other abnormalities.

The same band-like hypertrophy of muscular fibre which assisted in forming a supernumerary ventricle on the right side may also be met with in the left ventricle, producing a similar anomaly.

Symptoms.—Many children at birth present an intensely blue discoloration, which more or less speedily passes away, depending upon the voluntary or artificial establishment of respiration, whereby the circulatory organs are rendered active and the cyanosis rapidly disappears. If, however, the discoloration continues, other conditions being excluded, congenital malformation of the heart or great vessels must be looked to as the causative agent. This is also the case in a child who weeks after birth develops cyanosis, which is then almost proof positive of congenital defect, provided, of course, that the cyanosis is not due to an acute disease, as acquired valvular disease, atelectasis, or pulmonary affections. Atelectasis and other pulmonary affections are to be diagnosed by their special respiratory symptoms, and malformations by their special pulse- and heart-symptoms.

If due to congenital malformation, a murmur may be heard, together with quickened pulse and rapid heart-action. If atelectasis and cardiac defect should be associated, the diagnosis is extremely difficult, and can only be verified by post-mortem examination, as the case in all likelihood will rapidly terminate in death.

Should the malformation be of such a character as is compatible with life, the child will present but few symptoms which are diagnostic, except the physical, and these unfortunately are not very satisfactory: the little patient grows and passes through the various stages of development in a feeble manner, is poorly nourished, and incapable of the usual exertions of early childhood and adolescence. One case, a girl, remained in bed until she was sixteen years old. Cyanosis may or may not be present. It is the rule that during the first week of life cyanosis, greater or less in degree, appears for the first time. It may then remit or entirely disappear, or it may remain permanent throughout the entire life of the individual. Dyspnœa may be a very exacting symptom, usually aggravated by exercise or excitement, at which time the cyanosis, if absent, may again become apparent, or if present is greatly intensified. The body temperature presents great variations in different cases. Some cases, by surface thermometry, will show a normal registry, but will complain of chilliness or of actual cold; others will show a subnormal temperature, possibly of half a degree, particularly after a paroxysm of dyspnœa, or cyanosis. If the temperature is materially lowered for any length of time, the case is approaching dissolution. The temperature is said to rise as high in these children when affected by febrile disease as it does in those with normal hearts. Palpitation is generally evident. In some cases it only occurs on exertion; in others when there is dilated hypertrophy and obstruction in the blood-current. It is then apt to be excessive, distressing, and alarming to the patients and their friends.

Cough is almost always present, aggravated by pulmonary congestion, to which these cases are liable on account of venous stasis in the bronchial and pulmonary mucous membranes. There may be bloody expectoration. Besides bronchitis they are prone to congestion of liver, spleen, general or local dropsy, and albuminuria. Clubbing and rounding of the fingers and arching of the nails was by the older observers considered characteristic of malformation of the heart. Later it was thought to be pathognomonic of tubercular pulmonary phthisis. Now, however, we recognize it in many other affections, as in acquired valvular disease, chronic pleurisy, and in chronic pulmonary diseases.

It is worthy of note, however, that frequently tubercular phthisis is associated with congenital stenosis of the pulmonary artery. This has been the experience of many observers. Whether it is a true relation between cause and effect, it is, in view of our knowledge of bacillary phthisis, indeed difficult to say, as it does not seem obvious why cases with congenital stenotic pulmonary arteries should present a soil that would favor the development of the bacillus tuberculosis.

There may be ulcerations about the toes, anus, vulva, or finger-nails, due to deficient circulation, or a peculiar skin mottling, thought by some to be characteristic. The physical signs are on the whole not as characteristic as we would desire; indeed, there exists no sign or sequence of signs by which a congenital murmur can be definitely differentiated from an acquired lesion.

By conjointly inspecting and palpating we may determine the fact that the heart is not in its normal position, and remembering the fact that displacement of the heart is usually associated with transposition of the principal trunks, we may in this way throw some light on the problem. Palpation not infrequently determines the presence of a purring thrill. Percussion may, or may not, show increased area of dulness, as a heart may be extensively malformed with but little, if any, alteration in its size. Auscultation will in all likelihood reveal a low, blowing, basal, systolic murmur, usually single. This murmur is generally caused by a patulous foramen ovale, or imperfect septum ventriculum. Of course the murmurs may be multiple, or they may be rough, rasping, and diastolic in time.

The murmur due to a patent foramen ovale may vary in time and intensity. Tilbury Fox considered that a murmur due to patent foramen ovale should be *presystolic* in time. George Johnson is of a similar opinion. The fact of the matter is, that the murmur may be either systolic or presystolic. Systolic, says Foster, when there is high pressure in the venous system, and the direction of the current is from right to left auricle, or is due to *vis a tergo* of a powerful right ventricle, the current is then from left to right auricle. Presystolic when from unusually strong *left* auricle there is a flow through the foramen into right auricle. Congenital disease of the pulmonary artery, or orifice, will always present cyanosis, in some cases marked blueness, in others sallowness or the whiteness of profound anæmia alternating with cyanotic attacks. The murmur is usually systolic, roaring or rolling, superficial, and apt to be rough. In two of Sansom's cases tactile thrill was appreciable.

Aortic stenosis is of such extreme rarity either as a congenital affection, or one of infancy, that we may almost exclude it from consideration. If murmurs occur at this region they are generally hæmic in origin. West, however, says that even these are rare before the seventh year.

The following summary of congenital murmurs, after Sansom, is, we think, of sufficient interest to be inserted here:

(1) Cyanosis with no murmur; *patent foramen ovale.*

(2) Cyanosis with systolic or presystolic murmur, varying

in intensity over sternal ends of third and fourth costal cartilage or third intercostal space; probably *patent foramen ovale.*

(3) Cyanosis with *loud,* unvarying systolic murmur at apex, and heard in back between scapulæ. There is probably imperfection in the *inter-ventricular septum.*

(4) Cyanosis or *marked* anæmia, with superficial systolic murmur at base; constriction at pulmonary orifice, possibly complicated with hæmic murmur.

(5) With congenital affection of heart and dilatation of left cavities; probably endocarditis of valves has been added.

Without an accurate and reliable clinical history, and a general consideration of all the symptoms, a diagnosis cannot be made by the physical examination, which, in itself debarred of this knowledge, is of little avail in elucidating the problem.

Prognosis.—It seems to be an established fact in congenital defects, as it is in acquired disease of the heart, that the prognosis does not depend so much upon the valve that is diseased, or upon the amount of stenosis and obstruction, or insufficiency and regurgitation, as it does upon the ability of the cavities to perform the work allotted to them. This secondary compensating alteration is the keynote in the prognosis.

It is said that less than eight per cent. of infants with malformed hearts die within the first week, and only thirty-six per cent. within the first year.

Of the immediate cause of death in infancy, about twenty-five per cent. die of dyspnœa, fifty per cent. of convulsions, and about twenty-five per cent. die of acute intercurrent disease, as hæmoptysis, affections of the brain, tuberculous disease, or intestinal and portal hemorrhage. Certain defects allow of a longer maintenance of life than others, as, for instance, if the ductus arteriosus remains pervious, and is the sole abnormality, life has lasted for the following number of years: nineteen, twenty-three, thirty-two, forty-eight, fifty-two. Sanders records a case which, however, succumbed at the fourth and a half month.

Stenosis of the aorta exerts but little influence upon the life of the individual; the left ventricle is so well able to hypertrophy, and thus overcome the stenosis, that the patient is hardly aware of its existence. Not so, however, if the pulmonary artery is narrowed, as life is here jeopardized from the inability of the right ventricle to sufficiently hypertrophy, and from the fact that stenosis of the pulmonary artery is liable to be accompanied by other congenital defects. However, cases of complete stenosis of the pulmonary artery have been recorded, in which the subjects reached the ages of sixteen and twenty-one years. Life has been maintained until thirty-seven years with stenosis and atresia of the pulmonary artery, with, however, patent septum ventriculorum. That cases may even grow old is shown by the case recorded in the *Peninsula J. M.*, Ann Arbor, Michigan, 1853–54, i. 213, in which a man with a patulous foramen ovale reached the age of sixty-six years. A woman with stenosis of the pulmonary artery, and patulous foramen ovale, with complete obstruction of the ductus arteriosus, reached the age of fifty-seven years, and eventually died of cerebral apoplexy.

In cases of stenosis of the pulmonary artery, with incomplete ventricular septum, Kussmaul has observed the following duration of life. From birth to 1 year, 8 cases; 1 to 5 years, 14 cases; 5 to 10 years, 19 cases; 10 to 20 years, 14 cases; 20 to 30 years, 9 cases.

Kussmaul has also shown that in almost complete stenosis or obliteration of the vessel the expectancy is markedly less: from birth to 6 months, 10 cases; 6 months to 1 year, 4 cases; 1 year to 5 years, 5 cases; 5 years to 10 years, 3 cases; to 21 years, 1 case; to 37 years, 1 case.

In transposition of the main trunks life is not liable to be long maintained; the subjects rarely reach even early adolescence. Four cases are recorded in which the little patients reached between two and three years of age.

Treatment.—We can expect to have but little, if any, effect upon grave cases of congenital cardiac defects; certain abnormalities are totally incompatible with life, and these cases speedily succumb to the unequal contest.

In other cases, by the maintenance of rest, both of body and mind, when we fear that the compensation is about to break, the exhibition of nutritious, easily-digested food, with attention to the gastro-intestinal tract and the larger abdominal glands, together with a carefully selected climate, with protection against cold or sudden chilling of the circulation, is about all that we are able to do in these cases.

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(To be continued.)

TORTICOLLIS INTERMITTENS.

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To those who live in malarial districts the diagnosis of such affections is frequently associated with great difficulties. The temptation to call every disease malarial which is complicated by fever is very strong, especially if the fact is considered that in malarial regions many diseases are accompanied, or at least complicated, by a paludal substratum. Rather than thus deceive himself, the conscientious observer will perhaps fall into the opposite error, that of under-estimating the importance of this factor or denying its existence, some modified forms of disease being as easily fitted into one clinical frame as into another. When we consider, furthermore, that the cause of malarial diseases has not as yet been definitely settled, and that for clinical purposes we are not yet allowed to accept any microscopical appearance as pathognomonic, it will be seen that for diagnostic purposes there remains only what we had before,—the clinical picture, the morbid anatomy, the etiology, and, finally, the reasoning *ex juvantibus et nocentibus*. As a result, I have long hesitated to bring before the medical public a description of a peculiar localization of the malarial poison, which I have observed in children only, and which has been very incompletely described by writers. It is only within the last year that I have been able so to show the relation between a peculiar set of symptoms and malarial poison as even to convince the reader, I hope,—a relation of which I have myself been assured for the past six or seven years.

To this collection of symptoms Bohn (*Jahrbch. f. Kinderheilkunde*, N. F. vi., p. 115, 1874) and Gerhard (*Habch. d. Kinderkrankheiten*, ii., p. 459) have given the name of torticollis spasmodica. He has seen but two cases, and—excellent observer that he is—he has described them in both of his articles in outline only. The name has seemed to me to have been badly chosen, because any torticollis may be spasmodic, and, further, that adjective hardly expresses enough, giving no clue to the nature of the affection. I have therefore substituted intermittens for spasmodica, believing it to express the exact condition better. In addition, it has seemed to me that the combination of symptoms which will be described under this name has shown itself in various degrees of intensity, the cause for which may probably be found in a localization of the poison at the roots of the nerves, or in the meninges of the cord or brain. The milder form, therefore, presents a disease of a very mild type; the severer ones end fatally or seriously endanger life.

It will be unnecessary to state that torticollis *per se* does not become dangerous to life.

The first symptoms, however, of the serious malady to be described are torticollis; and whether the result of inflammatory primary development or the result of extension from the roots of the spinal or cerebral nerves to the meninges it is impossible to state at present. Cases of torticollis due to intermittens have been described before (see Bohn, l. c., and Soltmann, *Gerhardt's Handbuch d. Kinderkrankheiten*, vi., p. 199, for literature), although they are rare, but I do not find them in the context that I wish to put them, nor bearing a relation to a peculiar form of meningitis of which I have seen several cases. As has been indicated before, the cases can be divided into classes, but three in number, depending upon the intensity of the affection. Essentially they are all characterized by a clonic contraction of the muscles of the neck, which comes on after well-marked intervals, lasts a certain length of time, and is accompanied by symptoms usually quite typical. The first class can be illustrated by the report of the following case:

Leone W., æt. four years. I saw the patient, a pale, badly-nourished child, for the first time on the 21st of August, 1882. The history is as follows: When three years of age, about one year before, she had had her first attack of "ague," a fever recurring every other day. The present attack manifested itself by a feeling of chilliness, coming on about ten or eleven o'clock in the morning, followed by very high fever, which lasted till evening. Upon examination of the patient I found a temperature of 101½° F. (3 o'clock P.M.), pulse quite rapid, and beginning perspiration. The mother stated that the child had had this attack for one week, and that it was of a tertian type. The patient was very anæmic, but I was informed that this is her natural color. The lymphatics, anterior and posterior and cervical, were slightly enlarged, more marked upon the right side, and the evidences of a beginning phthisis were found over the right apex. The spleen was enlarged; it could be distinctly felt beyond the free border of the ribs, but all other organs were healthy. There was ordered for the patient 0.35 sulph. of quinia, to be given on the morning of the 23d of August at 6 A.M., in the mean time patient to be taken into the open air, receive liberal diet, etc. Returning to see the little girl on the 23d of August, I found that the attack had been broken. Ordered small doses of liq. potass. arsenit., and asked the patient to report to me in about ten days. On the 28th of August I received word to visit the patient again, and I now found a peculiar condition present. The child, according to the statement of the mother, awoke perfectly well, but about eleven o'clock in the morning complained of severe pain in the back of her head and neck. Examination revealed slight tenseness of the superficial muscles at the back of the neck, and slight tenderness upon pressure. The temperature was slightly elevated (100° F.), the pulse was rapid, face flushed, and the child, being held in its mother's arms, complained very much of the pain. At about 5 o'clock P.M. the pain left the child, and it ran about to play as usual, and enjoyed a hearty meal for its supper. On the 29th of August the child was perfectly well, but upon the 30th the same condition described above repeated itself. I now ordered the same quantity of quinia as before for the 1st of September, and the condition did not reappear. In order to make doubly sure I prescribed this dose to be repeated every seventh day for three weeks, continuing the arsenic in the mean time, and the intermittens was removed.

This, then, was an example of the mildest type,—characterized by pain and some stiffening about the superficial muscles of the neck, without producing any change in the position of the head. This attack coming on at regular intervals, in a child that had been healthy, accompanied by fever and enlarged spleen, and leaving the child apparently perfectly normal. The second class is marked by the prominence of the torticollis, the following being a specimen:

Lawrence B., æt. four years, was brought to my office on May 7, 1884, with the following history: The boy had been perfectly well up to within four days, when he complained of pain in the back of his neck, and his mother noticed that the child held his head in a peculiar way. This had come on at about 1 o'clock P.M., and had lasted until he was put to bed. The attack had repeated itself every day, perhaps growing worse, at least the child now wanted to lie down when the pain came on. In the morning the little fellow got up perfectly well, ate heartily, and played until the pain came on, but then felt very badly. He slept all night, and before the attack complained of chilliness and wanted to get to the kitchen stove. Examining the child I found a well-nourished boy, his appearance corresponding to that of a healthy child at his age, with the exception of a peculiar position of his head. The chin was elevated slightly and the head was drawn backward and downward, so that the distance between the occiput and shoulders was very much diminished. Upon having the child undressed I found a tonic contraction of all the superficial muscles of the neck, the skin over them decidedly hyperæsthetic and the muscles sensitive to pressure. When the child walked the tension of the muscles was increased, the head was rigidly held in place, and the patient resembled one with caries of the upper cervical vertebræ. When asked to pick up anything from the floor he objected seriously, saying it hurt, but after persuasion attempted, and succeeded in the same manner as he would if having Pott's disease. The temperature was elevated to 102½° F., the pulse rapid, but no other evidences of disease were to be found, except an enlargement of the spleen. I prescribed 0.25 sulphate of quinia to be given the next day, at 10 A.M., and the child to be brought again to me. The attack returned the next day, but earlier; the dose of quinia was doubled, to be given an hour earlier. Again the attack returned, and the time of administering the quinia was changed to 6 A.M., my favorite time for giving quinine in intermittens, with the desired result. The treatment was followed up by Fowler's solution until the spleen could no longer be felt, and the patient was discharged well. In the fall of the same year the attack again came on, yielding readily to the same treatment.

The second class, then, is characterized by the great stiffening of the superficial muscles of neck, accompanied by fever and enlarged spleen, and occurring in distinct paroxysms, leaving the patient perfectly well. For the third class the following history. The patient was seen in consultation with my friend Dr. Fackler, to whom I am indebted for the history of the case.

March 3, 1886.—Patient, Nettie H., aged five years. On February 21, had catarrhal pneumonia, which left no traces.

Present condition showed nothing abnormal, except enlargement of the spleen. Mother stated that at 4 A.M. the patient aroused her, complaining of intense pain in the occiput and posterior cervical regions. At that time the head was retracted and high fever present. Not knowing what the attack was, and not being able to find any physical evidences of disease except the enlarged spleen and slight anæmia, I prescribed small doses of arsenic, to await further developments. The attacks recurred during the subsequent three nights, the identical symptoms being noticed, but beginning at an earlier hour. Indications pointed to a malarial origin, but moderate doses of quinia were followed by no beneficial effects. About a week after the inception of the disease, the rise of temperature occurred at 11 P.M., and I was able to witness the attack. The patient was in bed, complained very much of pain, was constantly moaning; the facial expression gave evidence of intense suffering, and the head was almost buried in the soft pillow upon which the child was lying. The attacks had gradually increased from one to four hours in duration. On the following morning the child was found at the table enjoying its meal, and no symptoms present except weakness from loss of sleep and continued nightly attacks. Now very large doses of quinia were given, and the attacks were markedly modified both in regard to intensity and duration, but they still made their appearance every night. Counsel being called agreed as to diagnosis, and recommended 1.00 of quinia at one dose. At this time, three weeks after the beginning of the disease, the patient was sallow, anæmic, very peevish and restless, somewhat hyperæsthetic, but all this, as well as the attacks, seemed to yield to the heroic dose of quinia. The child seemed apparently well, but did not regain its strength; the spleen still remained enlarged, and after one week's continuance of this condition symptoms began to develop showing an implication of the central nervous system. The retracted condition of the head became permanent but painless, the irritability and hyperæsthesia again returned, the stomach became irritable, vomiting occurred, and the bowels were very much constipated. The temperature remained elevated, with evening exacerbations, the pulse was rapid and somewhat irregular, the pupils were contracted. This condition lasted for three or four days, then the pupils became dilated, pulse and respiration decidedly irregular, the child cried out, complaining very much of headache, and finally died of exhaustion on the 7th of April, eight weeks after I had been first called. A post-mortem examination was not permitted. This brief narration shows what is meant by cases of the third class; first torticollis accompanied by all the symptoms of the second class, then a doubtful condition, indicating complication of the central nervous system, but at the same time explicable by the assumption of chronic malarial poisoning, and finally well-marked evidences of cerebro-spinal meningitis. Before closing the narration of cases I wish to call attention to the occurrence of malarial poisoning in all the children of one family, which has quite recently come under my observation. These cases will show, at the same time, how the various forms of malaria are interchangeable, and lend color to the view that all symptoms described before are attributable to malaria.

Infant H., æt. twenty-three months. Began January 12, 1887, with a remittent fever; lasted two weeks; all the characteristic symptoms on the part of bronchial tubes, bowels, spleen, tongue, and fever were present. Total recovery.

Willie H., æt. seven years; taken sick January 19; complained of pain in the neck and headache; attack began every afternoon at three o'clock; chin was elevated and muscles of the back of the neck very much contracted; when free from the attack was perfectly well; spleen enlarged. The attack lasted for three days. On the 22d of January 0.35 quin. sulph. were given four hours before the beginning of the attack. Not proving sufficient, the dose was increased to 0.50, with the desired result. No relapse up to the present.

Alma H., æt. four years; began January 26, 1887. Child complained of chilliness at about eleven o'clock in the morning, then held her head to one side, complaining of pain at the back of the head and along the side of the neck; sterno-cleido-mastoideus muscle found contracted, as well as muscles at the back of the neck; spleen enlarged; temperature, 102° F.; attack lasted four hours; child perfectly well after the attack. One dose of quin. sulph., 0.35, given early the next morning, and the child did not complain the next day. No recurrence.

Samuel H., æt. nine years; began January 26. Began with all the symptoms of a case of Class II. After one week's duration symptoms of cerebro-spinal meningitis set in, from which the child is recovering, but is still under treatment. Enormous enlargement of the spleen.

Celia H., æt. twelve years; began January 3, 1887. Attack comes on after dinner; has complained of pain in her neck for one day only; no stiffening of the muscles. Case presents characteristics of Class I.; yields readily to treatment.

Fanny H., æt. ten years; has an ordinary case of intermittens quotidiana, which is easily broken.

The number of cases that I have seen, on the whole, is not very great,—eleven in ten years. Of these, four belong to Class I., five to Class II., and two to Class III. The prognosis is favorable, except in Class III. In reporting these cases I have purposely omitted smaller details so as not to lengthen the paper. The propositions to be discussed, however, reduce themselves to the following:

I. The poison of malaria sometimes localizes itself at the roots of the nerves supplying the superficial muscles of the neck (especially the spinal accessory).

II. This poison may extend from the nerves to the meninges of the cord or brain, or to both.

III. A relation exists between the poison of malaria and sporadic cases of cerebro-spinal meningitis.

IV. The ordinary treatment for malaria usually suffices for this peculiar form of localization.

PRIMARY NEPHRITIS IN. INFANCY.

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(Concluded from page 19.)

CASE VII. *Acute parenchymatous nephritis; peculiar nervous symptoms; death on the third day; autopsy.*—The following case was communicated to me by my friend Dr. Charles

E. Darrow, of Rochester, New York, in whose practice it occurred, and to whom I am indebted for the privilege of publishing it in this connection.

A previously healthy male child, aged seven months, of healthy parents in good circumstances, was taken quite suddenly ill on Saturday evening and died on the following Tuesday morning. The symptoms during life were as follows:

It was taken with crying and restlessness; throughout the illness the respirations were rapid, sixty per minute, but repeated and careful examinations of the lungs and heart gave no signs of disease. The temperature was never above 99° F.; pulse not specially frequent; vomiting was present in the beginning, but was not severe and did not continue; the bowels were regular; no cerebral symptoms; urine passed moderately freely; was once examined with negative results; there was no paralysis, no convulsions, and in fact no positive symptoms except a steadily increasing weakness and rapid respirations. It died quietly and easily.

As nothing during life pointed to the brain, it was not examined at the autopsy. All the other organs were rather anæmic, but otherwise substantially normal, except the kidneys, which showed to the naked eye very marked congestion, and under the microscope well-marked parenchymatous nephritis, with crystals of urates in the tubes and pelvis. Urine found in the bladder was examined, and found to contain so much albumen as almost to solidify on boiling, and numerous casts were seen under the microscope. It is worthy of mention that transient attacks of marked pallor were observed during the last month while the child was sleeping, and also that the napkins had shown occasionally a pinkish-red stain, which was almost indelible, but did not appear until, after being soiled, they were boiled in soap and water.

CASE VIII. *Acute diffuse nephritis: convulsions; dropsy; almost complete suppression of urine; recovery.*—The next case was kindly communicated to me by Dr. Wm. B. Anderton, of New York, who saw the patient in consultation.

A little girl eighteen months old was taken quite suddenly ill with convulsions and marked febrile disturbance, followed in a short time by general anasarca and almost complete suppression of urine. There was frequent vomiting and muscular twitchings, but no repetition of the convulsions. The highest temperature taken was 102° F. The urine was of a dark brown color, contained at least fifty per cent. albumen by bulk, and under the microscope were seen blood, and epithelial and blood casts in abundance.

The duration of acute symptoms was about ten days. The case responded promptly to treatment by free purgation and diaphoresis, and made a good recovery. The child belonged to a family in good circumstances, lived in a healthy part of New York City, had no desquamation or any sign of scarlatina. In fact, it had not been out of the house for over a month before it was taken ill, and no exciting cause was known.

I have been surprised, in looking up the literature of nephritis, to find how little has been published upon primary inflammation of the kidneys in infancy. Rilliet and Barthez say they have seen but one case. Grisolle mentions one in which the usual symptoms of adults—dropsy, etc.—were present. Most of the text-books upon diseases of children either omit to notice it altogether, or mention it merely as something which is of doubtful existence.

The following cases include all that I have been able to collect where enough details were given to lead us to accept the diagnosis of acute nephritis, if not in all as certain, at least highly probable.* With the aid of the "Index Catalogue" and the "Index Medicus" I have made a pretty careful investigation of the current literature for the past fifty years.

CASE IX.—Dr. J. Lewis Smith presented to the New York Pathological Society (*Medical Record*, November 14, 1885) the kidneys of a child six months of age, who, being previously healthy, was taken ill on July 15, and died September 1. In the beginning the child passed no urine for twenty-four hours; the secretion was re-established under the use of sweet spirits of nitre. After this time the engrossing symptoms were intestinal and cerebral. The child had from four to eight passages a day from the bowels. At the end of two weeks general convulsions occurred, followed by marked cerebral symptoms lasting three days. Later on there was progressive weakness, inability to nurse, and for the last month a continuous febrile movement, usually ranging from 100° to 103°, once reaching 105°, generally higher at night. There were no symptoms pointing directly to the kidneys, and it was not suspected that they were diseased.

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* One reference given in the "Index Catalogue" I have been unable to look up,—viz., a case of "Nephritis with Cardiac Hypertrophy in an Infant," by Dubreuill (*Gazette Hebd. de Sci. Med. de Bordeaux*, 1880–81, i. 962).

The autopsy showed the principal lesion to be in the kidneys. Dr. Frank Ferguson made the following report upon the specimens. The organs were enlarged, generally congested, with numerous hemorrhages on the surface and in the cortical and medullary portions. In places the straight and convoluted tubes were not visible on account of abundant areas of round and spindle-celled infiltration; cast-matter filled the tubes. There was no increase of fibrous tissue. There were some patches of broncho-pneumonia, and an increase of serum in the ventricles of the brain. The urine found in the bladder was examined, and found to contain many hyaline and granular casts, blood-globules, and enough albumen to make it nearly solid on boiling.

CASE X.—J. M. Booth (*Brit. Med. Jour.*, October 15, 1881) reports briefly the case of a healthy infant, three months of age, who, after a well-marked exposure, developed all the usual symptoms of acute nephritis. There was general dropsy, the urine was of a low specific gravity (1001), contained twenty per cent. of albumen, and granular and blood casts were seen under the microscope.

The case made a prompt recovery.

CASE XI.—E. L. Duer (*Philadelphia Med. Times*, December 15, 1870) reports the case of an infant, aged seven months, who had an attack of diarrhœa, beginning on August 5, but permanently checked by August 14. The child remained much prostrated, and cerebral symptoms developed, becoming marked by August 18; there being contracted pupils, occasional strabismus, and a rolling up of the eyes during sleep. Death took place on August 30, opisthotonos and great dyspnœa having existed just before.

At the autopsy the intestines were found pale and walls somewhat softened. Slight exudation was seen on the convexity, and also at the base of the brain, but none in the cord. The other organs were substantially normal, except the kidneys; these were large, flabby, and anæmic. A number of ecchymotic spots were present in the cortex. Microscopical examination showed the tubules to be granular. The bladder contained about two ounces of urine, which was highly albuminous, and contained granular and hyaline casts, renal epithelium, and many blood-globules.

The body was not emaciated; there was no dropsy. The infant had never had scarlatina.

The writer raises the query whether the intestinal or the renal lesion were the primary one, or whether both depended upon some blood-lesion.

Hirschsprung (*Jahrbuch für Kinderheilk.*, 1883, Bd. 19) reports several cases, as follows:

CASE XII.—A female child, seven months old, markedly rachitic, had had for a few days vomiting, without other digestive symptoms, and cough. On admission to the hospital the temperature was 40° C., pulse 144; there was restlessness, the child crying all night, but nothing discovered to point to local disease. The next day a little diarrhœa, less fever (38.9°), pulse more rapid (160). On the third day the child died suddenly. Autopsy showed heart slightly hypertrophied and walls fatty; kidneys very much enlarged, and showing the changes of acute interstitial nephritis to a marked degree; ureters and bladder normal.

Urine drawn from the bladder was highly albuminous.

CASE XIII.—A bottle-fed female child, five months old, had suffered from eczema of the scalp for several months. On admission was quite ill, but nothing could be found, on examination of chest or abdomen, to account for the symptoms until the urine was examined. It contained considerable albumen. The child slept much and ate little. Later the temperature rose to 41° C., and death occurred on the fourth day after admission.

The heart here, as in the previous case, was large and somewhat fatty; the other organs were essentially normal, except the kidneys, which showed decided parenchymatous changes of an inflammatory character.

CASE XIV.—A female infant, twelve months old, which had never thriven, after suffering for months from eczema of the scalp, enlarged glands, etc., was admitted with a history of vomiting and diarrhœa of a few days' standing. The face was pale, the temperature 39.5°, urine decidedly albuminous. In a few days the child became drowsy, then sleepless, with occasional attacks of vomiting, and died on the fifth day after she came under observation. The autopsy revealed essentially the same lesions as in the preceding case.

CASE XV.—A girl, two years old, had ulcerative keratitis and otorrhœa for eight weeks. On admission urine was examined, and albumen found almost to render it solid on boiling; quantity small; epithelial, hyaline, and granular casts were found under the microscope. There was œdema of the hands, feet, and eyelids. The child remained in the hospital ten weeks and was discharged cured, the urine being normal.

CASE XVI.—He makes brief mention of a fifth case, which was seized with convulsions a few days before admission, and in which the only lesion found at the autopsy was in the kidneys. It is to be regretted that more details of this and the preceding cases are not given.

Cahen (*Union Médicale*, 1853, p. 589) reports the following cases illustrating the dependence of cases of infantile convulsions upon renal disease.

CASES XVII. AND XVIII.—Two infants, aged respectively five and six months, were taken in the midst of apparent health with convulsions. Albuminuria was found to coexist, and lasted several days after the convulsions subsided. Both patients recovered. It seemed partly clear that the convulsions depended upon the condition of the urine.

CASE XIX.—He reports the case of an infant seized suddenly with convulsions lasting several hours. Death occurred the next day.

At the autopsy but little serum was found in the ventricles of the brain, but no hemorrhages. Slight serous effusion was found in the pleural and peritoneal cavities, but lungs, heart, and liver showed nothing abnormal. The kidneys were considerably enlarged, cortex of a pale yellow color, pyramids red. A little urine was found in the bladder, which was albuminous. (Amount of albumen not given.)

CASE XX.—His last case died when two days old, of convulsions. The organs were found normal except the kidneys, which were congested. The urine found in the bladder was albuminous. (Amount of albumen not given.)

CASE XXI.—Cahen quotes a case from Córlieu of convulsions in a newly-born child being associated with albuminuria. This symptom speedily disappeared after the convulsions. In none of these five cases was dropsy present.

Cahen examined the urine in several cases of "nervous convulsions" in infancy, and in many epileptics at the time of the seizure, with negative results, so that he is convinced that the convulsions are not the cause of the albuminuria, but *vice versa.*

He further made a number of experiments, examining the urine taken post mortem from the bladder, without finding albumen in any case, except when evidence of nephritis was present.

This point we may certainly question. I have been myself unable to make enough experiments to determine how much significance, if any, is to be attached to albumen found in urine taken post mortem. Dr. Francis Delafield has informed me that, from a large number of observations, he has ceased to attach any importance to the presence of albumen in post-mortem urine, unless the amount of albumen was large. A small amount present is of no consequence, and probably comes from the epithelium of the bladder.

This opinion is further substantiated by my friend Dr. W. P. Northrup, who said he had in many cases found enough albumen to give a distinct reaction with nitric acid where there was no evidence of renal disease.

The presence of casts, however, is as positive evidence in post-mortem urine as in that passed during life. The same may be said also of albumen when present in large quantities.

CASE XXII.—Joseph Adolphus (*Chicago Medical Times*, March, 1871), in an article on congestion of the kidneys and its results, relates the following case which is worth quoting:

A child two years old was taken with convulsions. The urine was found to contain a large quantity of albumen and uric acid crystals in abundance. Recovery took place under the use of packs and the internal administration of alkalies, although the albumen persisted for a week.

CASE XXIII.—W. C. Roberts (*New York Journal of Medicine and Surgery,* July, 1840) reports two cases with brief histories, and the pathological appearances which are given do not throw much light upon the cases; still, enough is given in one case to make the diagnosis tolerably certain.

It is as follows: A child, nineteen months old, after a well-marked exposure and wetting, had dropsy, first in the face, later in the feet, ankles, and abdomen. The urine was diminished in quantity, and finally suppressed for two or three days before death. There was fever, dyspnœa, delirium, and great restlessness, but no coma nor convulsions. No examination of urine is recorded. The kidneys are described as being at the autopsy large, pale, and firm.

Of these twenty-three cases reported, a reasonable doubt exists in regard to the diagnosis of primary nephritis in Cases VI., XVI., XIX., and XX. The first one mentioned has some uncertain features about it, and the last three are so briefly reported that we are hardly warranted in accepting them, since in two the diagnosis rested upon the mere presence of albumen in post-mortem urine, which, we have seen, is not at all conclusive.

There remain, then, nineteen cases at or under two years of age from which we may draw some inferences. In all of these the evidence, to those who reported them at least, was satisfactory that they were independent of infectious diseases. In my own five cases I feel very confident that no such cause existed. These patients had long been inmates of an institution, several of them since birth. They were under close medical observation. Case VII. was the child of a physician; it also had been carefully watched, and had shown no symptoms whatever of any illness until three days before death.

I am well aware that scarlatinal nephritis not infrequently shows itself when the primary disease has been overlooked. But careful investigation into the history and surroundings of the patient, search for traces of desquamation on hands and feet, or the presence of glandular enlargements will nearly always lead us to a correct conclusion about the case. I say with Goodhart, that the burden of proof is always upon him who believes a given case of dropsy to be of scarlatinal origin.

A study of the foregoing cases brings out very clearly the fact that acute nephritis in infancy may declare itself by very unusual symptoms, so obscure as to mislead even the careful diagnostician. Heretofore physicians have not thought it necessary to examine the urine in young children unless they were suffering from some infectious disease, or presented dropsy or suppression of urine.

The cases, however, show that *dropsy* was not a prominent symptom. It is noted in only five cases, and in one of these it was not present till late in the disease. These facts correspond with what we find in renal disease in adults. It is well known now that the importance of dropsy as a symptom in acute as well as in chronic nephritis has been greatly exaggerated.

The *quantity of urine* passed is a symptom of which much is made in adult cases, and when taken in connection with the specific gravity it is very valuable for diagnosis. In infants the difficulties in the way of collecting the entire amount of urine are very great, and it is especially significant that in only seven cases is it stated that the urine was so scanty as to attract attention.

The disease was ushered in by *gastro-intestinal symptoms* in five cases. Vomiting was present with more or less frequency throughout the disease in four cases; some looseness of the bowels existed in six cases.

Fever is mentioned in ten cases; in five it was high for a period varying from three days to four weeks. In two cases the pyrexia was remarkably great.

The *pulse* presented nothing of special interest; it was usually rapid with the high temperature and weak only towards the close.

Respiration was peculiar in five cases. In one there was very marked irregularity; in two it was very rapid independently of high fever or pulmonary symptoms; in two more there was decided dyspnœa. These symptoms were undoubtedly uræmic.

Nervous symptoms were prominent in almost every case; in several they engrossed the attention of the attendants. Convulsions were present in five cases, usually at the onset, or more correctly speaking, this was the first symptom noticed. This emphasizes the importance of the examination of the urine in every case of convulsions in children, as has so often been done regarding convulsions in adults. An extreme degree of restlessness and irritability was seen in several other cases, where convulsions seemed imminent but did not occur. In some high fever accompanied these symptoms, but in others they were independent of this influence.

In three cases marked drowsiness existed, but in only one case was there complete coma. The other nervous symptoms present were delirium, rigidity of the muscles of the neck, and irregular and contracted pupils. In two cases there was from the beginning very marked prostration, without temperature or other striking symptoms. In one case this, with the very rapid respiration, were the only really positive symptoms, yet the case (No. VII.) proved fatal in three days.

Urine.—The quantity obtained for examination was nearly always so small that but few observations upon specific gravity were made.

Casts in abundance were present in nine cases; in three they were taken from the bladder post mortem, a fact which does not invalidate their significance. Casts were found in every instance except one, in which a microscopical examination of the urine was stated to have been made. In this case (No. V.) it was examined but once, and so small a quantity was obtained that the result can hardly be considered conclusive that they were not present.

Albumen was present in large amount in thirteen cases. In four of these the urine was taken from the bladder post mortem. [Cases VII., IX., XI., and XII.] In all except one, casts were also present, and in that one the lesions in the kidneys confirmed the diagnosis. I have not admitted to these statistics the cases where albumen is stated merely to have been present post mortem, and where a diagnosis was made from this fact alone. In five cases the presence of albumen during life was detected, but the amount not specified. The diagnosis here rested upon its persistence for a week or more in four cases, and the coexistence of marked nervous symptoms in three, and almost complete suppression of urine in one. In the remaining case it "speedily disappeared after the convulsions ceased" (Case XXI.).

Of the nineteen cases, eleven died and eight recovered. Autopsies were held in ten of the eleven fatal cases.

In Cases I., IV., and IX., the lesions of well-marked acute interstitial nephritis are enumerated with sufficient exactness to leave no room for doubt as to their nature. In Case XII. we have the statement of the writer merely that acute interstitial nephritis was present, but not a description of the lesions sufficiently full to enable us to judge for ourselves.

Acute parenchymatous nephritis is stated by this same writer (Hirschsprung), a good authority, to have been present in Cases XIII. and XIV., decided albuminuria having existed during life.

In Cases V., VII., and IX. the clinical symptoms and pathological findings taken together make an unquestioned diagnosis of parenchymatous nephritis, although the findings alone would hardly be conclusive.

In Case XXIII. we cannot draw any conclusions as to the nature of the morbid process, though the history is a clear one.

In the single fatal case without an autopsy (Case II.), the diagnosis rested on scanty urine, with an abundance of casts and large amount of albumen, dropsy, and death in a comatose condition. In the eight cases of recovery the diagnosis was made upon the condition of the urine.

It is not to be supposed that the mortality here given of eleven cases out of nineteen represents the real death-rate from these forms of nephritis. The truth no doubt is, that the great proportion of the milder cases escape notice altogether. It is a significant fact that in six of the fatal cases the diagnosis was not made until the autopsy was made. In most of these cases the nervous symptoms had been the engrossing ones during life. This fact alone shows how easy it is for even careful men to overlook these cases. No doubt the greater number of them pass under other names, even when fatal, unless autopsies are made.

The symptoms as a rule are misleading, and tend to attract our attention to the brain or digestive system rather than to the kidneys. A diagnosis is then only to be made by careful and repeated examinations of the urine.

Every careful practitioner nowadays makes the urinary examination in adults a part of the routine in every obscure case, whether acute or chronic, as much as an examination of the heart and lungs. Yet in infants I am firmly convinced, both by observation and by inquiry, that the urine is very rarely examined unless the patient be suffering from some infectious disease, particularly scarlatina or diphtheria.

The great causes of chronic nephritis do not exist in infancy, and hence we almost never find it either clinically or at autopsy. The acute variety, especially in its lighter forms, I am satisfied is not at all rare, and the urine should be examined in every case of convulsions, persistent vomiting without apparent cause in the stomach, unusual prostration occurring in the course of other diseases, disturbed respiration, either rapid or irregular, without evidence of pulmonary disease, or sudden high temperature without evidence of local disease.

The difficulty of obtaining the urine in infants has no doubt often deterred us from making examinations when otherwise this would have been done. Several methods have been suggested for this purpose. The application of a cold hand or cloth over the bladder will often provoke expulsion of its contents. In other cases a hot application may succeed in a similar way. A sponge carefully cleansed and pinned over the genitals in the napkin has been recommended, but has the very obvious objection that in its meshes would be entangled casts, blood-globules, or epithelial cells, so that it can only be used to collect urine to be examined for albumen. A small cup pinned up in the same way I have found to be an easy and tolerably efficient method, but it needs to be watched pretty closely or it will get displaced. An ingenious medical friend has used a condom for this purpose, and states that it is all that can be wished for in male infants, and in females is more satisfactory than any other receptacle.

Failure with the above methods should lead us always to employ the catheter, which, after all, is the most reliable and certain means we have at our command. In using the catheter we must obviously not attach any importance to a few blood-globules, as these will almost always be found.

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Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Prophylactic Measures of Disinfection to be used in Cases of Infectious Disease. (*Arch. f. K.* [abstracted], Bd. viii. H. 1.)

This paper embodies the report of a commission composed of MM. Dellataille Jorissenne, Romiée, and Putseys.

The report contains statements concerning the mortality in Holland since 1872, when the law which pertains to infectious diseases went into force. The bearing of this law was with respect to isolation and disinfection. Since it went into effect there has been a diminution in the number of deaths from typhoid fever, smallpox, scarlet fever, measles, and diphtheria; but not from croup and whooping-cough.

Among the rich, isolation can be readily effected; but among the laboring classes and the very poor its accomplishment is difficult; therefore there should be for them houses of isolation and hospitals where they can obtain the necessary care and medical aid. With regard to the avoidance of infection in asylums for little children, every institution of that character should have an isolating-room, into which every child should be brought who showed the slightest symptoms of infectious disease, and should be kept there under medical supervision until the disease is developed; then he should be transferred to a hospital.

As to avoidance of infection at school, no child who has passed through an infectious disease should be allowed to return to school again until a certificate is given by his physician that all danger of infection is over, and that the child's dwelling and clothing have been properly disinfected. Blanks are given to the school-children, which are to be filled out and returned whenever an infectious disease appears either in their own families or in the families of those who may be living in the same house with them. Other blanks contain lists of both the well and the sick children in a family, and the school which each attends. The local authorities have the right to insist upon the proper disinfection of a house, furniture, clothing, etc., after they have been exposed to the influence of infectious diseases.

The best way to disinfect the house is by washing the walls, base-boards, and furniture with a 1-1000 solution of sublimate, and then with water and soap. Afterwards it should be freely ventilated. The best means for disinfecting beds, clothing, etc., is heat; the articles should be subjected for a long time to a temperature of 100° to 140° C. The sick-room should be thoroughly ventilated, and towels, bed-linen, etc., washed in a 1-2000 solution of sublimate before they are used again. Wagons of transportation should also be disinfected after each time of use. All attendants should wash hands, nails, beard, and hair with a five-per-cent. solution of carbolic acid, or a 1-2000 solution of sublimate. Food should not be kept in a sick-room. A. F. C.

Jehn: The Time of Puberty and the Question of Overwork. (*Arch. f. K.* [abstracted], Bd. viii. H. 1.)

The author observes that though the pupils are not always possessed of the same intellectual freshness and capacity, the plan of studies is arranged in an unalterable and unbending manner. He desires to show that just as a physical and intellectual indisposition on the part of pupils obtains during the period of puberty, the burdens for that period being increased, so is the question of overburdening at that period one which is pertinent for discussion. Next, he observes that puberty, which ordinarily comes at the fourteenth or fifteenth year of life, may be hastened by this plan of crowding. It is quite clear that this premature development of body and mind, excited by pathological factors, produces unfavorable results. The forced development of the genital apparatus produces a powerful revolution in the entire organism. Pathological variations occur in the distribution of the blood to the various organs; the children suffer from palpitations, alternate redness and paleness as to the color of the face, nose-bleed, and headaches. Weariness, languor, and general *malaise* are of common occurrence.

With some girls puberty occurs without the appearance of the menstrual molimina. Others of a more nervous temperament show symptoms of a still more unpleasant character. These facts admonish us of the important relations which subsist between the intellectual and the sexual life. Not infrequently does it happen that the compulsory labor and impulsive treatment of this period are the foundation for more or less severe psychical disorders. The author also refers to onanism, which he regards as the scourge of youth. It cannot be denied that this evil, or disease, is of very great frequency, nor can it be accurately estimated how great the influence of confinement in school during a large portion of the day has in this direction. With regard to the influence which the school-work itself has upon the scholars at this critical time, it is readily demonstrable that just at the period of puberty the demands upon the minds of pupils are increased. It is therefore in the highest degree unfavorable that at a time in which the scholar's entire nervous system is in a condition of the greatest irritability, and the brain, of necessity, less active and capable of work than at other times, demands should be made which properly belong to a more advanced stage of intellectual activity. Reference is here made not only to mathematics, but also to the various languages. To relieve this bad state of affairs, a reasonable degree of revolution in the schools will be required. As a matter of fact, nothing can be attained at the hands of the physicians except as they work in harmony with the teachers. First of all, the hours for attendance in school must be brought to the minimum limit, and eventually scholars who are burdened by their studies during the period of puberty must be partially excused from them. Furthermore, the regulations with respect to compulsory exercise must be entirely reformed, and suitable games substituted therefor to a certain extent. A. F. C.

Alvarez: The Fever of Growing Children. (*Arch. f. K.* [from *Arch. di Pat. Inf.*, iv. 1], Bd. viii. H. 1.)

After alluding to the different opinions of writers upon the causes of the fever which occurs to children at different periods in their physical development, and which is commonly known as the *growing* fever, the author narrates a case of that character which was observed by him in a girl nine years of age. The principal symptoms in the case were moderate elevation of temperature, pulse 115, pains in both tibiæ, loss of appetite, and great thirst. There was no previous history of rheumatism, and both parents were healthy. Near each knee-joint were two or three spots, transversely located, which resembled the scars of pregnancy. The epiphyses of the femur and tibia on both sides were thickened and sensitive to pressure. There was no atrophy of the extremities. Percussion and auscultation revealed a normal condition of the heart. The diagnosis was epiphyseal ostitis connected with or due to development, and anæmia, also *growing* fever. The prognosis was favorable. The treatment consisted of rest, nerve-tonics, and the use of tincture of iodine to the painful parts. After twenty days of treatment the patient was cured, only a slight degree of anæmia remaining. Thirty days later acute endocarditis supervened, from which the patient died. By exclusion it was established that the endocarditis was secondary, though this conclusion could not be considered an impregnable one in all respects. To this class of cases may be added or compared those in which there is hypertrophy of the heart, which is also due, apparently, to too rapid development. A. F. C.

Kraus: Intestinal Irrigation in Catarrhal Icterus. (*Arch. f. K.*, Bd. viii. H. 1.)

Since in catarrhal icterus there is a mechanical hindrance to the entrance of the bile from the common bile-duct into the intestine, it is apparent that it may be remedied by mechanical means, that is by increased peristaltic action whether caused by cathartic drugs or by rectal enemata. It has long been known that the free use of cold water in the stomach and intestines will not only excite peristaltic action, but will also benefit the circulation in those organs. But it has been further shown within the past ten years by Köhrig, Krull, Winternitz, and Monti that such treatment also increases the secretion of bile, and that in cases of catarrhal icterus a cure may often be effected by its use. The author of this paper in following out this line of investigation has had a series of nineteen cases in which intestinal irrigation was used; the patients ranging from three to sixteen years of age, and of every variety of constitution. The irrigations were of cold water of a temperature of 12° to 18° R., and were very well borne by the children, large and small alike. The quantity of water which was used varied with the age of the child, being in no case less than a quart nor more than two quarts. Colicky pains were sometimes produced when the water was very cold (12° to 14°), and it is recommended that such low degrees of temperature be not used in anæmic, weak, and irritable children of tender age. Diarrhœa is not a contraindication to this method of treatment, in fact it is likely that it will be benefited by the increased peristaltic action. In the large majority of the author's cases only four or five irrigations were needed to produce a cure. The author found that mild cases of catarrhal icterus recovered under this treatment, with relief to the gastro-duodenal symptoms, more quickly than by any system of internal medication. The inexpensiveness of this method of treatment is a not unimportant point in practice in hospitals and among the poor. A. F. C.

Touissaint: Thirst in Young Infants. (*L'Union Méd. du Can.*, October, 1886.)

It is a mistake to suppose that because milk is a liquid food it is at the same time a drink which is capable of satisfying the thirst of infants. Although milk appeases hunger, it makes thirst more intense after it has stood awhile in the stomach and digestion of it has begun. It is thirst which causes healthy, breast-nourished infants to cry for long periods of time in many instances. There are many cases of indigestion due to weakness or insufficiency of the child's gastric juice which would be greatly benefited or even cured if the child were allowed an occasional drink of water. A. F. C.

Simon: Treatment of Bronchitis in Children. (*L'Union Méd. du Can.* [from *Gaz. des Hôp.*], October, 1886.)

Apparently simple forms of bronchitis demand the most minute precautions. Absolute rest in bed is indispensable. Warm drinks and milk should be given, and if the cough is paroxysmal a ptisan of polygala or a sedative mixture may be made from ten drops of the tincture of aconite-root, ten drops of the tincture of belladonna, and five grams of the syrup of codeine. Of this mixture a dessertspoonful may be given to a child three years of age, or a coffeespoonful to a younger child. Kermes mineral may be given in doses of five centigrammes, or the white oxide of antimony in small doses if the cough is severe; but these powerful drugs should be discontinued with the cessation of the spasmodic cough. The skin may be excited to action by inunction of warm fats and the use of flannel if the child is very young; by mustard cataplasms if the child have passed the third year of life; or by flying-blisters if the mustard does not suffice. If the stomach becomes deranged an emetic should be given. In bronchopneumonia and capillary bronchitis the treatment is difficult, and demands the most careful attention. Rest in bed, cotton-wool upon the feet, warm drinks, milk, weak coffee, weak stimulants, and bouillon should be administered. Emetics, which are useful in other forms of bronchitis, will do absolute harm in these, unless they are used with the greatest discretion. Neither ipecac, kermes mineral, white oxide of antimony, nor opium are indicated in these cases. If warm baths are used it must also be with the greatest caution, the depressed condition of the child being always borne in mind. The author's scheme of medication, in addition to what has been mentioned, consists of milk with cherry-water, *café au lait*, weak tea, and a stimulating alcoholic potion composed of brandy fifteen parts, Malaga forty parts, syrup of ether five parts. A very small quantity of acetate of ammonia may be added if expectoration is difficult. Neither belladonna nor aconite should be used at all. From five to twenty dry cups may be used twice a day, and even small flying-blisters may be used for three hours at a time upon the side which is the more affected. Small doses of sulphate of quinine may be given once or twice a day in coffee or sugar-water, to overcome the febrile movement and regulate the heart-action. This will be found to be especially useful in children over two years of age. In addition there should be suitable hygienic precautions and a warm and moist atmosphere. A. F. C.

Clemente-Ferreira: The Use of Antipyrine for Febrile Conditions during Dentition. (*Rev. Mens. des Mal. de l'Enf.*, October, 1886.)

The usefulness of antipyrine in infantile therapeutics is daily becoming greater, and it now constitutes one of the most desirable acquisitions of modern therapeutics. Its particular value in broncho-pulmonary diseases of a febrile character is a matter of daily demonstration, and by its use we are enabled to obtain the most satisfactory results in diseases of a similar character which have hitherto furnished the most sombre picture in infantile pathology. In addition to the usefulness which has been referred to, the author has found it to be of great advantage in the febrile conditions which commonly accompany the evolution of the teeth. Not only is its antipyretic effect exerted in cases of this character, but it also has a perceptible sedative effect upon the nervous system. It may be given to a teething child in doses of eighty centigrammes per day, the dose being repeated until the fever and other symptoms have disappeared. If the stomach is sensitive, it is desirable to give the drug through the rectum. A. F. C.

II.—MEDICINE.

Cheadle: Constipation in Childhood and its Sequel, Atony, and Dilatation of the Colon. (*Lancet*, December 4 and 11, 1886.)

In these two lectures the author discusses this important subject in an interesting and profitable manner.

Among the causes existing in adults for constipation, he mentions dread of stool from the pain which accompanies the act, as being an important factor in many cases among children. The continued and habitual use of coarse foods such as oatmeal, etc., he thinks not advisable, as these, like too many purgatives, tend to produce atony of the muscular coat from continued over-stimulation.

The habitual use of enemata is productive only of harm. Cases are cited where this practice had been continued for months, sometimes two or three enemata being retained in the bowels for some time before expulsion took place, with the result of causing such dilatation of the colon as to crowd up the heart and lungs, producing dyspnœa and impeded circulation, and great abdominal distention.

Puncture of the bowels with a small trocar was used in one case with success; this being followed by the use of abdominal bandages.

The method of treatment he has found most satisfactory is the continuous use of non-stimulating purgatives, especially the salines, together with the administration of strychnia and belladonna in all cases of long standing, where atony is probably a feature.

For young infants he employs the carbonate of magnesia, given in doses of gr. x to gr. xxx, once or twice a day in milk.

For older infants and young children a mixture of the sulphates of magnesia and soda in a little larger doses than the above, together with strychnia, belladonna, and iron, if the case is a chronic one.

In older children a nightly pill of aloin with the last-mentioned drugs is advised.

Attention to diet, exercise, bathing, and habits generally, is not overlooked by the writer. Great benefit sometimes results from systematic massage of the abdomen with castor or cod-liver oil.

Hughlings Jackson: Infantile Convulsions and their Pathology. (*Brit. Med. Jour.*, December 25, 1886.)

The writer conceives of central nervous system containing groups of sensori-motor centres grouped in three tiers. Roughly speaking, the anatomical distribution coincides with this conception; the lower centres being limited above by the pores, the middle consisting of the motor and sensory cortical centres, and the uppermost that part of the brain in front of these motor centres.

All the parts of the body are represented in each tier, the combination between centres being more complex as we ascend. It is to be understood that the upper exercises a certain control over the next below it.

In infancy the uppermost and middle layers are not yet developed, while the lowest developing rapidly is in a state of unstable equilibrium, and in consequence liable to respond unduly to physiological stimuli when these are exaggerated.

Dr. Jackson goes back to imperfect respiration as a cause of convulsions. This causes an undue amount of venous blood in the respiratory centre, producing a stimulus so that it may lead to asphyxial convulsions, because imperfectly resisted.

Rosenbach has been able to produce fits of the true epileptic type by prolonged and forcible stimulation of the cortex of a dog, while stimuli applied below produced convulsive movements, though not of the epileptic type.

Andrews: Nervous Affections in Children and their Treatment by Cod-Liver Oil. (*Practitioner*, December, 1886.)

The paper discusses the following propositions:

1. In the process of growth, much nerve-power is expended and heat disappears, which assumes some form of potential energy.

2. The exhaustion consequent upon this expenditure shows itself during the first three or four months of life by head-symptoms which may be easily mistaken for meningitis in the first stage; later, during dentition, by laryngismus stridulus; and still later by a form of nervous asthma from exhaustion of the pneumogastric and respiratory tract which passes under the name sometimes of "rickets of the chest."

3. These symptoms of nerve-exhaustion occur at the time of the development of some new part of the body, as the development of the special senses during the first three or four months. Evolution of teeth from seven to nine, and development of stomach digestion from nine to twelve.

4. This expenditure of nerve-force and disappearance of heat are best met by the administration of cod-liver oil, which may be, as well, a prophylactic in delicate children.

Several interesting illustrative cases are reported by the writer.

Simon: The Different Exudations of a White Color which may be found upon Children's Throats. (*L'Union Méd. du Can.* [from *Gaz. des Hôp.*], September, 1886.)

We may have

1. Diphtheritic products; that is to say, false membranes which have proceeded from the mucous membrane, are deeply adherent to it by fibrous elongations, and frequently accompanied by swelling of the submaxillary glands and slight elevation of temperature.

2. Pultaceous products; that is, epithelial elements associated with mucous membrane.

3. Herpetic products, such as may follow amygdalitis

which results from cold. These consist of herpetic vesicles grouped together, giving a product of a whitish appearance which is soluble in water.

4. Products which result from the cauterization of a granulating surface with nitrate of silver; for example, a syphilitic ulceration.

5. The spots which resemble milk which are seen upon the tonsils of all small children, and which are nothing but the caseous products of alimentation.

6. Muguet of a confident form at the diphtheroid angina of Lasèque, which occurs from children suffering from typhoid fever, bronchitis in its severer forms, and scarlatina, and which is seen at the bottom of the throat upon the two tonsils and upon the mucous membrane of the isthmus of the pharynx. In this disease deposits are formed within twenty-four hours, as in certain cases of true diphtheria. Only the progress of the disease and the local applications which are made clear up the diagnosis by demonstrating the absence of cohesion of these deposits. The author concludes with the sensible observation that if he is called to see a patient in whom the diagnosis of angina is not yet possible, he regards it for the time as a case of pultaceous angina, but takes the same precautions and the same care that would be indicated if it were an angina of severe form, and especially insists that the child be kept in bed.

A. F. C.

Blache: Diarrhœa in Children from Six Weeks to Three Years of Age. (*L'Union Méd. du Can.*, September, 1886.)

Whatever be the nature of the diarrhœa, its origin, its intensity, or the time of its beginning, the author has found the following treatment satisfactory, modifying it to suit different cases. 1. Diminution of the nourishment, suitable baths, and a cataplasm over the abdomen continually. 2. Each morning, for three to five days in succession, a small teaspoonful of the following mixture should be given:

℞ Olei ricini, grm. x;
Syrupi mucil. acæ., grm. x;
Aquæ florum auran., grm. iv.

The bottle should be well shaken at the time the medicine is given. The average dose of this purgative mixture is a coffeespoonful, but this quantity must be increased or diminished according to the age and susceptibility of the child. One gramme of castor oil is usually enough for a dose for a child under six months of age, and two grammes for a child under two years of age. A. F. C.

Froebelins: Concerning the Frequency of Tuberculosis and its Principal Localizations in Early Childhood. (*Rev. Mens. des Mal. de l'Enf.* [from *J. f. K.*], August, 1886.)

From 1874 to 1883 ninety-one thousand three hundred and seventy infants, from one to four months old, were received at the St. Petersburg Asylum; eighteen thousand five hundred and sixty-nine of them died (but only four per cent. of the deaths were due to tuberculosis). The author concludes from this that tuberculosis is a rare disease in early infancy. The largest number of deaths occurred during the first three and the last months of the year, that is during the cold weather. As to the age and weight of those who died in the largest number of cases, the children were well nourished and strongly developed. Most of the children died after they had been in the hospital from two to four months. No disease seemed to have any especial predisposing action in developing tuberculosis. With regard to the localization of the disease, the author's tables show clearly that the lungs were involved in all cases. Next in order of frequency were involved the bronchial glands, the liver, the spleen, and the intestines; then the brain and its membranes, the kidneys, the mesenteric glands, the heart and pericardium, the pleuræ, and the upper respiratory passages. From this it would appear that even in the earliest months of life tuberculosis from inhalation is much more frequent than the intestinal form, or that which is associated with alimentation. Among the pulmonary lesions caseous pneumonia was found in thirty-four and eight-tenths per cent., peribronchitis and pneumonia in forty-six per cent., cavities in seven per cent., and miliary tuberculosis without parenchymatous change in twelve per cent. In the latter cheesy infiltration of the bronchial glands was always found. This localization of the disease in children, when compared with that which is commonly seen in adults, shows that the disease is much more diffuse in the former than in the latter, that the bronchial glands are also much more extensively affected in children, but that the disease in its intestinal and mesenteric forms is more frequently seen in older persons.

A. F. C.

Depasse: Syphilitic Hepatitis. (*Rev. Mens. des Mal. de l'Enf.*, August, 1886.)

Congenital syphilitic hepatitis has been recognized ever since Gubler's description of it in 1852, though there are few recorded cases of the disease. Mollière publishes eighteen cases in which there were visceral lesions caused by hereditary syphilis, but in none of them was the liver involved, while

Ollivier and Ranvier have published three cases in which the liver *was* involved: Gubler one, Depaul one, Prévost one, and Parrot admits that cases of this character are to be found. All of the published cases had a fatal termination. The author gives a detailed account of a case which came under his observation in which a cure resulted. In Gubler's account the statement is made that icterus is not present in this disease; the author supports him in this assertion. Both the parents of the child which was treated by the author showed indications of syphilis at its birth. Ascites was a marked symptom during the first year in which treatment was received, and paracentesis was required four times. Mercurial treatment was continued three years, and the child had been in perfect and continuous health five years when this paper was published. A. F. C.

Keser: Intra-Peritoneal Hemorrhage in the New-Born. (*Brit. Med. Jour.*, December 18, 1886.)

A male infant, born of healthy parents, died on the ninth day. Labor was easy; child born asphyxiated, and was with some difficulty restored. In the first few days slight bleeding from the nose occurred, and then ecchymoses beneath conjunctiva and subcutaneous on the back, scrotum, etc. The abdomen became swollen and discolored.

At the autopsy eight ounces of fluid blood were found in the peritoneum. The spleen was much enlarged and intestines healthy. No history of hæmophilia could be found in the family.

Mr. Morgan, in discussing the above case, mentioned another somewhat similar, in which jaundice and large subcutaneous ecchymoses were present.

At the autopsy a congenital obliteration of the ductus communis choledochus was found. These cases, he said, were more frequent in males than in females.

Wolfenden: Athetosis following Diphtheria. (*Practitioner*, December, 1886.)

The patient, a girl of eighteen, had a severe form of diphtheria in November, 1884. There followed this some weakness in the right leg, but no actual paralysis; numbness and "pins-and-needles" feelings existed in fingers and toes. She was seen the following February with well-marked athetoid movements in the fingers of right hand and also in the toes.

The right leg was still weak. Complete recovery took place in a month's treatment by tincture of iron and other tonics.

III.—SURGERY.

Thomas: Two Rare Cases of Intussusception. (*Lancet*, December 25, 1886.)

CASE I. *Spontaneous reduction.*—A boy, sixteen months old, had great pain and diarrhœa on February 7. Diarrhœa continued until the 9th, when he was better, then relapsed. On the 10th much straining, and nothing but mucus passed; began vomiting continuously. On the 11th passed nothing but blood; he was collapsed. A cylindrical tumor was felt above and to the left of umbilicus, and another tumor passed downwards in the line of the descending colon. A distinct tumor was felt per rectum. The hips were elevated, and manipulation kept up over the tumor for fifteen minutes without special change; opium was then given and the child left. The next morning the tumor had entirely disappeared, and the child had a natural movement from the bowels.

CASE II. *Injections of water on the third day causing rupture of the intestine and death.*—A healthy boy of five months was taken with the usual symptoms, which came on acutely. When seen on the third day there was great tympanites and a tumor felt per rectum.

Six ounces of warm water were injected slowly, some of which was returned. Half as much more had been introduced when a rumbling noise was heard, but no water was expelled per anum. The child went into collapse and died in an hour and a half, sixty-six hours from the onset of symptoms.

The autopsy showed the presence in peritoneum of about six ounces of water, and a rent was found in the sheath of the intussusception. The bowel was much thinned at the point of rupture.

Barr: Necrosis of the Osseous Labyrinth and Removal of the Sequestrum by the External Auditory Canal. (*Lancet*, January 29, 1887.)

The patient, a boy of eleven, had had for ten years a profuse purulent discharge from the right ear, the starting-point being scarlatina at one year. Facial paralysis had existed almost from the beginning. There was at no time any staggering in the gait. The specimen removed consisted of the vestibule, the cochlea, and the semi circular canals almost complete. There had evidently been destruction of the facial nerve, and the paralysis remained unchanged after the removal of the bone.

The discharge ceased within two weeks. There was total loss of hearing in the ear.

Turner: Retro-Pharyngeal Abscess and Death from Pressure on the Trachea. (*Lancet*, January 1, 1887.)

An infant three months old, syphilitic, after having a series of phlegmons on the body, was taken with sudden dyspnœa and hurried to a hospital. Tracheotomy was performed at once with temporary relief, but the dyspnœa recurred and the child died six hours after the first symptom. The autopsy showed an abscess a little to the right of the pharynx and behind it at a point where it joins the œsophagus, producing compression on the trachea. The dyspnœa seemed due to spasm.

There was no vertebral disease.

Verneuil: Kyphosis in Childhood. (*Jahrb. f. K.* [from *Gaz. Méd. de Par.*, 1886], *Bd.* xxv. H. 3.)

With regard to the etiology of this disease, those writers are nearest the truth who state that the cause lies in the muscular structure of the back. Diathetic conditions also have an important bearing upon the question of causation. As to treatment, if weakness of the muscles is apparent the treatment may be directed to the strengthening of those muscles in the following ways: (1) By the sudden application of cold. This may be accomplished by the use of a large towel saturated with very cold water and applied to the entire extent of the vertebral column. This method is preferable to douches and sea baths, which are not always available. Hydrotherapeutic measures, of whatever character, must be used for only a few minutes at a time, and should be followed by brisk rubbing. (2) By massage. The child must be laid upon his belly with the arms crossed, so as to separate the shoulder-blades as far as possible, and the entire back be rubbed and kneaded as thoroughly as possible. (3) By faradism. One should begin with a very weak current lasting six to eight minutes. It should be passed along both sides of the dorsal line, from the third cervical to the tenth dorsal vertebra. (4) By physiological gymnastic exercise. The child must stand erect, with the arms hanging loosely by the side and the lower extremities approximated.

The following exercises should then be carried out in succession:

(*a*) A deep inspiration should be taken, the chest being expanded and then raised upward and thrown forward.

(*b*) Backward motions of the head, neck, and upper part of the chest.

(*c*) Forcible approximation of the elbows backward, the forearms being partly bent.

(*d*) Backward motions of the entire upper portion of the body.

(*e*) Standing upon tiptoes.

(*f*) Taking eight or ten steps on tiptoes.

(*g*) Sudden relaxation of all muscular tension.

(*h*) Short period of rest, and then repetition of the preceding motions, in the same order.

Between the periods of exercise, some form of protective apparatus should be worn; a plaster jacket may be all that will be required. A. F. C.

Kustner: On the Medico-Legal Importance of Hæmatoma of the Sterno-Cleido-Mastoid Muscle in New-born Infants. (*Jour. de Méd.* [from *Centr. f. Gyn.*, 1886], September 26, 1886.)

The method by which this form of hæmatoma is produced is discussed, and the author disagrees with the opinion that it is always due to excessive traction upon the muscle. A case occurred in his own experience in which the breech presented. There was no interference in any manner; not even was the body held while the trunk was being expelled, and yet there was an hæmatoma of the left sterno-cleido-mastoid muscle. Hence the inference that they may occur in labors that are entirely normal. Several experiments were made by the author upon new-born infants, in which a row of hooks was introduced into the sterno-mastoid muscle, and traction in different directions made upon the neck. It was found as a result that neither lateral flexion nor elongation of the neck had had any effect upon the sterno-mastoid, but that when the neck was twisted the hooks were displaced, and this was especially the case when the neck was turned towards the side near the experimenter. Torsions of such a character are not infrequent even in natural labor, and it was believed that they were responsible for hæmatomata. Though these tumors are not infrequent after extraction with the forceps, it was believed that the forceps played only a secondary part in their production. The following conclusions are advanced:

1. Hæmatoma of the sterno-mastoid is not caused by elongation or extension of the neck, but by torsion.
2. Since the neck may be twisted to a considerable degree during spontaneous delivery, hæmatoma may occur in simple cases of presentation by the vertex or the breech.
3. The presence of hæmatoma does not prove that there has been criminal or instrumental violence. A. F. C.

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DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,

AND

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(Continued from February Number.)

CYANOSIS.

CYANOSIS, or morbus cœruleus, sometimes styled the "blue disease," is to be considered as among the most prominent and characteristic symptoms of congenital heart-disease. It may also, however, be met with in the acquired variety, whether it happens to be an endo- or a pericardial inflammation; it may also be present in hydrops pericardii or accompany an active pericardial effusion, so that we conclude that cyanosis is better considered as a symptom than as a disease *per se.*

Cyanosis is in all probability caused by stasis in the venous current independently, to a certain extent, of the admixture of venous and arterial blood, though should this mingling of the two forms of blood occur the blue discoloration will probably be more marked and persistent. Many cases prove, however, that there is no positive relation between the amount of this admixture and the degree of discoloration. For ex-

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ample, cases are recorded in which the aorta arose from the right ventricle, and others in which the heart had only two cavities, the cyanosis not being constant or very well marked. In most congenital cases the conditions which cause venous stasis are present in their most favorable aspect, accompanied by a very faulty venous return. Some authorities (Morgagni, Stillé) consider that cyanosis is alone due to the first mentioned cause,—*i.e.*, venous stasis; others attribute to the latter—admixture of blood (Hunter and Gintrac), the main causative agent in the blue discoloration; it would seem, however, that both are right, and that it is the association of the two causes in most congenital cases that renders the symptoms the more evident, although, as above mentioned, cases are on record in which there was complete admixture of the blood without any cyanosis whatever. Another factor, in making the symptom the more appreciable, is the extreme pallor and the thin skin which these cases usually present, thus making the blue color the more evident. Again, the entire quantity of blood receives less oxygen and, per consequence, is much darker than normal, assisting in making the patient even more livid. In so far, then, as the blood is in a pathological state may cyanosis be considered as a separate disease, and, if we consider that the blood is deficient in oxygen, and contains an excess of carbonic acid with carbonaceous products, we may classify cyanosis with the blood-diseases. Most cases of persistent cyanosis in the early years of life are due to congenital defects in the centre of the circulation,—that is, the heart or the great vessels. *Sex* appears to offer a direct predisposing factor, as most cases are recorded as occurring among males. Of 134 cases collated by Lewis Smith, 78 were males and 56 females. Gintrac reports 28 males and 16 females; Stillé, 41 males and 31 females; and Aberle, in reporting 180 cases, says that two-thirds were males.

Upon examining the mortuary statistics we find, for example, that New York reports 207 deaths in a year from cyanosis, 117 males, 90 females; and that the city of Philadelphia, for the year 1876, returns a total of 100 deaths from cyanosis, 53 males, 47 females: 94 of these were under one year, 5 at one year, and 1 at two years. The report of the same city for the year 1882 shows, however, a nearly equal distribution between the two sexes: total deaths 139; males 69, females 70; 135 under one year, 2 at one year, 2 at two years. England presents for two years 691 deaths from this cause, 418 males and 273 females.

A point worthy of note is the fact that the later statistics do not show such an excess of males as are reported by the earlier writers.

Most cases of cyanosis will be met with in large cities and among the so-called lower classes. Those who have a perpetual struggle for an existence, in damp, ill-ventilated apartments, with scanty food and deficient clothing, together with wretched hygienic surroundings, are most apt to give birth to cyanotic babes. Smith cites the following statistics in proof of the fact that cities return the largest proportion of cyanotic cases. In New York City, for six years, there was 1 death from cyanosis to 436 deaths from all causes. In Brooklyn the proportion was about the same. The converse of the proposition is shown from the fact that the whole State of Kentucky, for a period of five years, reports but 1 death from cyanosis to 2469 from all causes. This line of argument could be carried on to great length, but enough has been cited to prove the action of agencies which enervate the system and destroy the health, in causing the birth of children with cardiac malformation and cyanosis. As we stated when considering the symptoms of congenital heart-disease, the cyanosis depending on congenital deformity may not show itself for some time after birth. Smith presents an interesting table, showing the time of appearance of cyanosis in 41 cases of congenital defect: in 3 at two weeks, 1 at three weeks, 2 at one month, 7 from one to two months, 5 from two to six months, 5 from six to twelve months, 3 from one year to two years, 6 from two to five years, 1 from five to ten years, 6 from ten to twenty years, 1 from twenty to forty years, 1 over forty years.

How well does this table illustrate the fact, to which we have already called attention, that the growing heart possesses a certain inherent power to conform itself to a disordered blood-circulation, and that a congenitally crippled heart may in certain instances carry on life to full adult age, giving the subject but little if any discomfort until some seemingly trifling incident aids in "breaking the compensation." On the other hand, the developing cause may be such a profound impression on the system as to give rise to the question as to whether it has not in itself crippled the heart independently of any congenital malformation that may have existed; for example, the case of Waters,* in which cyanosis developed in a child aged six, during an attack of measles, and remained persistent. Here it is to be decided whether the morbilli itself did not attack the endo- or pericardium, and give rise to a case of acquired cyanosis. Another example is the case of Napper,† in which a six-months' babe received a severe fall, and was cyanotic forever afterward. Steadman‡ records a case of an infant, æt. ten weeks, who presented coincidently convulsions and cyanosis. Cases could in this way be indefinitely cited, but enough has been advanced to show that when cyanosis develops we must decide whether it is congenital in origin or due to an acquired disease; after congenital cyanosis once appears, there is then but little improvement in the patient, as the probability is that the compensation has become wholly inadequate, and the cavities are dilated or dilating.

The symptoms, prognosis, modes of compensation, and treatment have already been considered under the head of congenital heart-disease; let us then conclude by citing a few illustrative cases from our hospital and private practice.

CASE I. J. W. was fourteen months old when he first came under observation; face œdematous, hands and feet pitting on pressure, extreme anæmia. On auscultation a loud, rough, systolic murmur or bruit, most marked in pulmonary area, but heard also with great clearness at the apex and in the left axilla. The child developed marked cyanosis six weeks after birth coincidently with a sharp attack of bronchitis, this latter becoming chronic, and persisting until death.

The liver and spleen were enlarged when the child first came under observation, and continued so throughout. Ten months after we first saw the child, or at its twenty-fourth month, the little patient succumbed to an attack of measles, the immediate cause of death being capillary bronchitis, "suffocative catarrh."

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* Phila. Med. Exam., June, 1850.

† Lond. Med. Gaz., 1841.

‡ Lancet, London, 1842.

Post-mortem, eight hours after death.

Heart. Right heart in a condition of dilated hypertrophy. Ductus arteriosus obliterated. The right auricle markedly dilated, foramen ovale patulous and valves very deficient; indeed, the intra-auricular septum was almost absent, the orifice was quite the size of a twenty-five-cent piece; nature had evidently attempted to close this unduly large orifice by membranous bands, and had been partially successful. The tricuspid orifice was widely dilated. Right ventricle dilated, pulmonary valves almost normal, orifice slightly dilated.

Left auricle was small, walls thin, mitral valve decreased in proportion to size of left heart, barely admitting tip of little finger; the left ventricle was also small, walls thin; aorta normal.

Lungs. Signs of capillary bronchitis, with here and there foci of recent catarrhal pneumonia.

Case II. The following case was observed on the post-mortem table of the Philadelphia Hospital: Baby S., a foundling, æt. three weeks. It was stated that the babe was blue when born, and when it came under observation was markedly cyanotic; lips, tongue, mucous membrane, and finger-nails all blue. In this case we were unable to detect a murmur with absolute certainty after repeated careful examinations. The child remained cyanotic nine weeks after admission; it died during a convulsion.

Post-mortem, twenty-four hours after death.

Heart. Left ventricle increased in size, cavity much larger than normal, walls thicker; aortic valves and aorta healthy. The left auricle was also somewhat increased in size, the mitral orifice dilated, admitting the index-finger very readily.

Right auricle in a condition of marked dilated hypertrophy, coronary sinus dilated, foramen ovale patulous, and the orifice of the tricuspid valve a mere slit, admitting simply a small probe. The right ventricle was enormously hypertrophied, with decrease in containing capacity, the walls were in some places three-quarters of an inch in thickness; on this side of the tricuspid orifice the leaflets were found to be adherent and imperfectly developed.

The orifice of the pulmonary artery was obliterated by the adherence of the semilunar valves one with the other. The ventricular septum was perfect, no communication existing between the right and left ventricle.

The ductus arteriosus was patulous, and would allow the point of a penholder to pass.

Lungs. Crepitant; scattered throughout both lungs were areas of pulmonary apoplexy.

CASE III. This boy, æt. three years, well illustrates the effect of an incomplete septum ventriculorum. During life the child presented a bulging præcordia, with impulse noticeable over a very large area, cardiac dulness extending from lower border of second rib to upper border of seventh. Palpation revealed a marked systolic third and auscultation a loud, rough murmur, systolic in time and heard over the entire præcordia.

Post-mortem.—Heart enormously enlarged, weighing almost as much as an adult heart. The foramen ovale was patulous; in the septum ventriculorum, at the part most remote from the apex, was an opening about the size of a ten-cent piece.

The tricuspid orifice was dilated, admitting first and second fingers to second joints. The mitral valve and orifice normal. The muscular structure of the left heart was much thickened, of the right much thinned.

That nature endeavors to effect a mode of cure in these cases was well proven by the post-mortem that we are now considering; the abnormal communication between the two ventricles was surrounded by an irregular corrugated arrangement of tissue as though an effort had been made to supply a bridging tissue or a series of little valves in order to correct the primary defect; this corrugated membrane was attached all around the opening except at one small part near the tricuspid valve, here were to be noted a series of cords seeming to interdigitate with the tricuspid leaflets. The child died of acute pneumonia.

ACUTE AND CHRONIC ENDOCARDITIS—ENDOCARDITIS IN THE FŒTUS AND NEW-BORN.

Endocarditis is an inflammation of the lining of the heart. This membrane, the endocardium, is a continuation of the membrana interna of the arteries, is non-vascular in character, and lies upon a connective-tissue basis, over the auriculo-ventricular valves; its internal coat or that over which the blood courses is composed of a layer of flat cells lying upon a fibro-elastic layer and connected to this layer and also to the basement membrane by connective-tissue fibres. It is through this net-work of connective tissue that the vasa vasorum find their way. The fibro-elastic tissue and the flat epithelial cells are most highly developed on the auricular surface. As regards the blood-vessels, the capillaries, which course along the cardiac walls beneath the endocardium, cease to exist in the sigmoid valves, and but few are found in the layers of the mitral.

Ætiology.—Acute, so-called idiopathic, endocarditis is probably extremely rare as a primary disease; indeed, it is doubtful if it occurs at all. Most of the cases that have been considered as idiopathic depend upon a primary alteration in the quality of the blood, either affecting its chemical composition, altering the normal constituents, or else depending upon some external morbific material which has gained entrance by contagium or is due to deficient elimination and excretion, allowing excrementitious matters to circulate over the endocardium in the blood-current.

Acute endocarditis is, however, proven to arise as a secondary affection in the course of certain diseases, as, for example, it is seen in certain diatheses; notably the lithæmic or in the course of essential zymotic fevers, as measles, variola, varioloid, and typhoid fever. It occurs often in pneumonia and pleurisy; it may also be met with as a manifestation of pyæmic invasion, producing the intercurrent variety and leading to ulcerative changes.

Mild attacks of endocarditis, possibly amounting to mere congestion and slight proliferation of the endothelial elements, directly predispose to more severe attacks.

Blache, however, believes that in the child primary endocarditis may arise independently of any other disease.

Authorities are not agreed as to the number of cases of endocarditis which complicate or are caused by rheumatism. It is our opinion that rheumatic endocarditis is more frequent in the child than in the adult. Vernay has found that of twenty-one cases of rheumatism between the ages of fourteen and twenty, only *one* escaped endocarditis.

D'Espine and Picot found in forty-seven cases of rheumatism in children only ten cases in which the sounds of the heart were perfectly normal.

Senator is responsible for the statement that the younger the patient the greater the risk of the heart becoming affected, as this organ is implicated in fully one-third of all the cases of rheumatism occurring before puberty.

Roger and Jaccoud have observed cases where the symptoms of endocarditis preceded for fifteen days the articular manifestations of rheumatism.

Scarlatina is frequently associated with rheumatic manifestations; hence endocarditis is not infrequently seen in connection with the two diseases. The acuteness of the attack of rheumatism, either simple or complicating scarlatina, will probably give evidence of endocarditis in cases where a less rapid onset and a milder sequence of symptoms would not direct attention to the heart; indeed, it is a well-established fact that chronic rheumatism may acutely invade the heart as well as the more acute rheumatic manifestations, and Gubler has seen it associated with muscular as well as articular rheumatism. It may be expected in all cases when the blood is altered in its characteristics or when it is contaminated by excrementitious or septic matter; in the latter we would include the whole field of bacteriology.

The association of endocarditis with erythema nodosum has been twice noted in children aged seven by Martineau. Chorea may be associated in an ætiological relation with the production of endocarditis. Should endocarditis arise during typhoid fever, it is apt to be masked by the more grave symptoms of the primary disease as illustrated by the case of Magnan, who observed a case of typhoid fever in a girl æt. fourteen, of an adynamic type; death occurred on the fifth day of the disease. During the progress of the disease the heart presented no symptoms, but at the autopsy some pericarditis was noted with effusion, the endocardium was affected around the mitral valve. Ulceration, however, had not yet arisen. As we see by this case, endocarditis may be caused by or associated with pericarditis, the same ætiological factor being the causative agent in both affections.

The association of endocarditis with phlegmonous periostitis or coxalgia in the young has been recorded. This Kirk noted in St. Bartholomew's Hospital in a boy æt. fourteen. The mitral and aortic valves were attacked, many emboli were found in distant organs. It may also be associated with osteomyelitis. Post-mortem examinations have definitely proven this association.

Classification.—As we shall see, the disease presents symptoms more or less marked in proportion to its severity, and these symptoms are due not to a different classification of the varieties but simply from classifying stages as separate and distinct forms of the same disease. Accordingly, then, we might classify endocarditis under three headings, (1) acute, (2) chronic or interstitial, (3) ulcerative. The second may be simply a chronic stage of the first, or may be developed primarily as a subacute or chronic form resulting from constitutional vice, as syphilis or rheumatism. The ulcerative form is in many cases almost totally independent of a well-definable cause.

Symptoms and Diagnosis.—The disease is peculiarly prone to be latent in the child, and the diagnosis of endocarditis—and by diagnosis we do not mean simply the detection of an inflamed endocardium, and the localization of its site—has been the subject of an almost endless amount of literature, a tangled mass of material found in text-books and journals, affirmations and denials, that probably have led to more confusion in the medical mind than has any one subject in the literature of medicine. The result is that the practitioner who has not been taught at the bedside is as much at sea as regards the diagnosis, prognosis, and treatment of the affection, as was the physician of the last decade. We must always remember that in studying cardiac diseases we have also to do with a vital fluid, capable of undergoing changes daily, yes, even hourly, in its composition and texture, such as its fluidity, coagulability, and plasticity, a total change in its constituents as regards their physical and chemical properties, and also by the addition of adventitious matters which may be taken up by it in its course through the vessels or by development within the fluid itself,—bacilli. We must also remember the character of the flow, its pressure, its force, and resistance, the regularity or intermitting of its rhythm, and also certain vibratory movements, which are transmitted by continuity and contiguity; also bear in mind that the cavities of the heart and blood-vessels are lined by vital structures, that they are variable in size, and that they are capable of being influenced through that subtle system which controls vitality, and to which we attribute trophic changes.

Taking all these matters into consideration, and bearing in mind that the subjective symptoms are few indeed, we are to rely alone upon our own sense of observation for a diagnosis, gathering what we can obtain from the general constitutional condition of the patient or from the subjective symptoms.

The *temperature* is apt to be extremely irregular, in fact is almost intermittent in type, fluctuating between 103° or 104°, and 99° or 100° during the acuteness of the attack.

Local Signs.—If the child is old enough, it will complain of a pain in the left axillary region; most young children will, however, locate the pain at about the ensiform cartilage; they seem to place their hand on this region instinctively. If the aorta is involved, we note shooting pains along its tract, increased by position. The further local symptoms will depend upon the character of the inflammation; in the mild forms, or those of simple hyperæmia and slight exudative changes, the symptoms seem to be in proportion to the depth of the inflammation. If the myocardium is at all involved, palpitation becomes a marked symptom, together with præcordial distress; as the disease advances the heart's action becomes tumultuous, *delirium cordis.*

Percussion in the early stages of acute endocarditis is indefinite; in fact, it is not of much value as a physical sign in acute endocarditis, where the cavities have undergone no changes.

The *pulse* is at first somewhat accelerated; later, however, when the cardiac muscle becomes involved in the process, it becomes feeble and dicrotic.

Respiration is markedly affected, dyspnœa arising very early in the case; indeed, in children suffering from disease with a known tendency toward the endocardium, the intervention of sudden and alarming dyspnœa, arising independently of pulmonary affection, may be the first indication that the attendant will have of cardiac implication. Cough may or may not be a prominent symptom, depending, as it does, to a great extent, upon the presence of dilated cavities, with inefficient systole and venous stasis.

Nausea and vomiting may arise early in the case or toward the close may constitute an alarming symptom, threatening life by exhaustion and inanition.

The patient may rapidly sink into an adynamic state, deepening into a profound typhoid condition, and death occurs from asystole. As a rule, great irregularity and tumultuous action of the heart show increased severity of the disease, the extent of the impulse and the impingement of the apex-beat becoming more marked as the case progresses. The obstruction in the circulation is further evidenced by the condition of the neck-circulation, the veins being distended and the arteries throbbing. In cases of endocarditis complicating rheumatism or in the exanthemata, the subjective symptoms may not be at all well marked. It must be borne in mind that the subjective symptoms in children have not the same significance as when they occur in an adult.

Physical Signs.—These are the class of symptoms upon which we are more apt to base our diagnosis, and are discoverable by conjointly inspecting, palpating, and ausculting the region under consideration. In all cases of scarlatina, kidney-disease, acute or chronic rheumatism, chorea, measles, and typhoid fever, the examination of the heart by auscultation should be made with care, as it is said that in about fifty per cent. of the cases of rheumatism in childhood the mitral valve will be affected.

Auscultation will generally reveal a systolic bruit or murmur at the apex. The murmur is sometimes heard with startling distinctness in children. At this age it is also more apt to be permanent. The abnormal sound may not alone be localized to the apex, but may be transmitted in various directions, even into the arterial system. It may be difficult to distinguish and correctly interpret this murmur, as in children a pericardial bruit often bears a striking resemblance to an endocardial murmur. Again, hæmic murmurs in the young child are at times differentiated only with the most extreme care. The character of the murmur in acute endocarditis will depend greatly upon the rapidity of the circulation, the character of the blood, and the condition of the endocardial surface over which the fluid passes, and will be further influenced by the degree of the inflammation.

Palpation reveals to us an irregularity in the heart's impulse, a more or less violent throbbing, and, possibly, should the inflammation be extensive, the presence of a vibratory thrill. It is also to palpation that we are indebted for evidences of involvement of the heart's structure, the myocardium, and for points in connection with the differential diagnosis of peri- or endocarditis; or where these two affections are associated it also gives us the exact location of the apex-beat, which is not only changed but frequently disappears altogether in pericarditis with effusion. In endocarditis we are able to recognize great diminution in the force of the apex-beat, or its change in position when severe endocarditis has attacked the lining membrane of the left ventricle, with involvement of the muscular structure and engorgement and over-distension of the cavities.

Inspection not alone will show us irregularity and tumultuous action of the heart, but will also advise us in regard to the condition of the circulation generally. In children the veins of the neck become turgid more readily than in adults; indeed, the presence of endocarditis affecting the mitral valve will, in a large number of cases, so impede the circulation through the pulmonary artery as to produce engorgement of the right heart and a tricuspid insufficiency to such a degree as to produce a murmur at this valve. Engorgement of the systemic veins would naturally be a result, the damming back of the blood-current through the lungs accentuating the second pulmonary sound, and either actually or relatively masking the intensity of the first sound. Indeed, the relation of this secondary effect of the damming back of the circulation upon the right heart is said to give us a tricuspid murmur in fifty per cent. of all cases where recent mitral disease exists. This murmur is generally heard over the body of the heart, and is accompanied by vibration. As will be seen further on, mitral disease occurring most frequently in childhood, and at this period of life causing much interference with the action of the valves, giving rise to obstruction and regurgitation, the large number of secondary tricuspid murmurs heard at this period of life is accounted for. It is a rare clinical fact for endocardial inflammation to localize itself at the aortic orifice during childhood. In children one is apt to find a soft pericardial friction that may be mistaken for an endocardial murmur.

Prognosis.—The prognosis is not necessarily fatal; it, however, must be guarded. Most children recover from the first attack, with, however, in all probability a chronic endocardial change, making the patient prone to subsequent attacks, or the subject of chronic valvular disease in later life. This permanent injury to the valves is always to be dreaded. When exudative changes are rapid in onset, the carrying of emboli with splenic engorgement, hemiplegia, pulmonary disturbance, and kidney-infarction will show an acute ulcerative process. This complication is especially apt to occur in all forms of septic disease, with endocarditis as a concomitant, for example, in scarlatina or diphtheria. Children, however, are more apt to be carried off by pulmonary complications, as engorgement or catarrhal pneumonia. Simple endocarditis complicating rheumatism or measles or scarlatina, barring its tendency to permanently affect the valves, is very rarely of itself a cause of death.

Post-mortem Lesions.—In making examinations of the heart in the young for suspected endocarditis, it is necessary to distinguish post-mortem imbibition from the slighter degrees of endocardial injection; the color generally aids us, as that produced by inflammation is bright red or scarlet and that from imbibition is violet; furthermore, the right heart usually presents the imbibition most clearly, and the left the signs of endocarditis. The cavities generally contain clots. Endocarditis usually selects primarily the edge of a valve, and the first change is simply one of consistence, proportionate to the degree of inflammation. Rarely do we find that the process has been arrested at this stage, but we may find that the case has been one of simple congestion with abnormal injection of the endocardium, most evident around the orifices of the left side. This process, as we have already stated, may be arrested here; but, if it goes on, vascularization and infiltration soon set in and the exudative stage is established. Blache has had the good fortune to study the initial stages of this disease on the post-mortem table at a very early date. In the infant the presence of exudate is most characteristic; this is accompanied by hyperæmia, increase in the size of the valve, whose surface becomes dense and rough and probably studded with vegetations. A more or less clear serum will be noted infiltrated into the surrounding tissue, the epithelial cells increase in size with infiltrated nuclei, the cells proliferating and becoming detached. Should a fibrous exudate occur, which, however, is more rare in children, the changes in the valves, of course, will be more marked and recognizable.

The exudate speedily becomes organized and vegetations form; those at the base consist essentially of the same form and structure, but they differ toward the periphery, as, for example, granular epithelium with hyaline nuclei or subendothelial nodosities, which look not unlike Paccinian corpuscles, or we may note fibroid growths sessile or pedunculated, condylomatous or papillomatous excrescences, or again callosities, which may be large and diffused. The membrana interna may take part in the process and become hyperplastic; this may extend into the aorta and produce atheroma, which, however, is somewhat unusual in the early years of life.

Ulcerative or purulent endocarditis may be noted in the heart of an infant, in the centre of a fibroid concretion, about the valve pus may be noted. In the infant, as in the adult, the lesions of endocarditis may be entirely localized to the left heart; they may, however, be met in the right heart also.

CASE IV. Mary A., æt. eight and a half,—this case occurred in our private practice,—had been under observation for some time, had irregular and ill-defined rheumatism of no definite type; child was somewhat anæmic.

Suddenly the signs of acute endocarditis were developed,—a loud apex-murmur, systolic in tone and audible in the axilla, was to be heard with great distinctness. The temperature rose to 102°, with morning remissions, presenting the characteristic type of intermittent temperature-range so often seen in these cases; face was puffy and feet œdematous.

Breathing became much embarrassed; hebetude developed, deepening into coma, from which she was aroused only with great difficulty; paralysis of the face developed; the child passed into convulsions, during which she died, four weeks after the endocardium was first affected. Percussion revealed an enlarged liver and spleen. The urine contained albumen, but no tube-casts were found at any time.

Post-mortem showed the evidences of recent endocarditis about the mitral valve and over the auricular endocardium. The case presented further lesions in the arterial system, which we will refer to under the appropriate heading.

ENDOCARDITIS IN THE FŒTUS AND NEW-BORN INFANT.

Rauchfous, of St. Petersburg, makes the statement that in several years he has encountered three hundred cases of fœtal endocarditis. Of this number the right heart was affected in one hundred and ninety-two cases, the left alone in but fifteen instances. The relatively greater frequency of fœtal endocarditis in the right chambers has been well recognized by all observers; it is stated in explanation that the increased blood-pressure on the pulmonary leaflets is the cause of the localization of fœtal endocarditis to the right heart. It is a fact that most congenital cardiac diseases are located at the pulmonary orifice.

The endocardial hyperplasia in this class of cases is generally a soft, red, pedunculated vegetation arranged at or about the tricuspid valve. Sometimes they are met with at the mitral valve, but rarely do we see them on either the aorta or pulmonary artery.

In the Hospital Necker, Blache has observed two cases of fœtal endocarditis in twins dead just after birth. In both hearts he noted soft red globular vegetations at the mitral valve.

Most of these cases of endocarditis have a connective-tissue proliferation as a base for the vegetations. Arising during fœtal life, they may, if the child survives, disappear, but endocarditis of intra-uterine life is, unfortunately, only too apt to result in organic changes giving rise to cyanosis at birth.

The diagnosis of endocarditis in the new-born is of course a difficult task. Cyanosis will be the most marked and characteristic symptom. Over the entire body may be noted a bluish discoloration; dyspnœa will be present, and the extremities cold, due to deficient circulation. Auscultation will possibly reveal a systolic bruit transmitted in the direction of the circulation; extreme palpitation and tumultuous cardiac action will not infrequently be noted over the entire præcordia. Death as a rule takes place within a few days after birth, when the diagnosis may be verified by the presence of the characteristic lesions. Hayem records the following case: Child died three days after birth; the mother had pneumonia at the time of confinement. Examination of the child's heart showed lesions of the tricuspid valves; the mitral and pulmonary were also affected, but the aortic was free. Right auricle was distended by clots; in the ventricle they were adherent to the columnæ carnæ. The meninges were infiltrated, the vessels ruptured, and hemorrhage had taken place into the cavities; left choroid plexus was thickened and covered with clots; the internal jugular and the sinuses also contained clots. Kidneys and liver were congested.

ULCERATIVE ENDOCARDITIS.

This disease has received various names by different writers, for example, *infectious*, *septic*, *arterial pyœmia*, *diphtheritic*, *mycosis endocardii*, and taking its name from the disease with which it is intercurrent, we cite the terms *scarlatinal* and *rheumatic* endocarditis as examples.

The appellation *acute ulcerative* is, however, in general use, and is perhaps as applicable as any that we could select;

malignant, however, could with propriety be associated in the title of many cases. Some authorities designate those cases in which the bacteria play an important rôle as malignant bacterial endocarditis.

As a rule, in childhood, this condition, which is the result of purulent emboli or necrotic changes in the interior of the heart, follows such diseases as diphtheria, the infectious diseases, or suppurative disease of the bone or joints. According to Osler, ulceration of the endocardium may be due to any of the following conditions: (1) rapid exudative process which cuts off the circulation at the apices of the papillary elevation; (2) degenerations of neoplastic tissue with softening of the villi or efflorescences which will be swept into the current, leaving ulcers; (3) minute abscesses in the valves beneath the endocardium which rupture and leave ulcers. The possibility of a primary protopathic endocarditis must, however, be recognized as, at least, a possible occurrence. Of course, we may have all stages and all degrees of severity of these vegetations and ulcerations, from the soft and friable vegetation to the purulent slough which teems with bacteria. In childhood this condition is usually secondary, being similar in this respect to tubercular nodules or ulceration into the endocardium, which are probably never primary at this site.

We cannot better describe the microscopical and macroscopical appearances of the parts attacked in ulcerative endocarditis than by quoting from the admirable article of Osler:*

"The study of a small fresh endocardial vegetation shows it to be made up of cells derived from the subendothelial layer, round and fusiform, which by their proliferation have produced a small nodular projection on the surface of the endocardium. Varying with the rapidity of the growth, the mass will present the characters of a soft granulation tissue or a tolerably firm fibrous outgrowth. Usually the round cells predominate, but there may be many elongated, spindle-formed cells with three or four processes. What part the endothelium plays in this growth has not been determined. Tiny out-growths may be seen in which the process appears to be entirely subendothelial, but usually before the mass attains any size the smooth surface is lost, and there is deposited upon it a cap of fibrin in the form of a granular, sometimes stratified, material, of variable thickness. Though this resembles an ordinary coagulable exudation, it is probably deposited directly from the blood, and is of the nature of a thrombus. Upon and in this layer may be found, sometimes in large numbers, those remarkable little bodies which have so long been known, when collected together, as Schultze's granule masses, and which have of late become so prominent as the blood-plates of Bizzozero and the hæmatoblasts of Hayem. Occasionally they are very abundant, and I have seen soft warty vegetations composed (superficially) in great part of them.

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* Med. News, March 21, 1885.

"The larger vegetations, more characteristic of malignant endocarditis, consist of a granular material composed of altered and dead tissue elements, fibrinous exudation, and colonies of micrococci; the deeper parts present the appearance of a granulation tissue, while at the attachment in the valve there is always more or less infiltration and increase of the cell elements. The granular substance is structureless, and resembles diphtheritic exudation, the resemblance at times being so close that one can readily understand the application of the term "diphtheritic" to the inflammation. It may be distinctly laminated, and with a high power fine filaments can be seen, though usually the granules conceal all appearance of structure. Strands of translucent material may occur throughout the mass, as if portions had undergone a sort of hyaline transformation. In some instances it is very marked. Pale spheres filled with granules also occur, and may be very abundant. They have been described as colonies of micrococci, but some regard them as altered endothelial elements. I have seen them too numerous to be explained on this view. At the attachment of the vegetation there is a zone of tissue deeply infiltrated with leucocytes, and deeper still the tissue elements of the valve present an increase of nuclei and cells. The destruction of tissue appears to result in two ways: first, a gradual extension inwards of the necrotic process, doubtless induced by the micrococci; secondly, the softening and separation of valve-tissue caused by the rapid development of leucocytes at the base of the vegetation.

"The micrococci are constant elements in the vegetations. All granules of a uniform size met with in the sections are not microörganisms, nor, indeed, are all which stain by some methods recommended for the detection of these bodies. By far the most satisfactory method is that of Gramm, in which the section, after staining in gentian violet, is transferred for a few minutes to a dilute solution of iodine and iodide of potassium, and then to the alcohol, when it is found that the color has been extracted from all tissue elements and nuclei, leaving only the microörganisms stained. They vary a good deal in number and arrangement, and may be scattered singly in the granular substance or arranged in groups. They are usually very numerous at the deeper part of the vegetations, just where the structureless material joins the granulation tissue, and they may penetrate deeply into the substance of the valve. Sometimes the smaller vegetations seem made up exclusively of them. Several of my specimens appear to confirm the view of Klebs, that the micrococci lodge first on the endocardium and penetrate into the substance, often as distinct columns. In their immediate vicinity there is a zone of necrosis, and beyond this an accumulation of leucocytes and signs of reactive inflammation. The microörganisms found in connection with malignant endocarditis are not all of the same kind. Klebs distinguishes two forms, one met with in septic and the other in rheumatic cases. In some instances the micrococci are all arranged in zoöglœa-like masses, in others, particularly the septic cases, they are in chaplets. Some present distinct capsules. Small elongated bacilli have also been found; I have seen them in one instance—short, stout rods often joined in pairs. Delafield and Prudden have recently noted the presence of bacilli in the vegetations of a very acute case of malignant endocarditis. Cornil, in a recent lecture, stated that the bacillus tuberculosis had been found in the vegetations on the valves in cases of phthisis, and expressed the opinion that before long we should have accurate knowledge of a variety of microörganisms in endocarditis, depending

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upon the nature of the primary disease. By culture experiments alone can we hope to have the question settled.

"Briefly stated, the theory of acute endocarditis which at present prevails, and the only one to which I shall refer, is that it is in all its forms an essentially mycotic process; the local and constitutional effects being produced by the growth on the valves, and the transference to distant parts of microbes, which vary in character with the disease in which it develops. This very attractive theory can be adjusted to meet every requirement of the case, though as yet lacking certain of those substantial data so necessary for full acceptance, but which, having been furnished of late years in other diseases, we may reasonably hope will in time also be forthcoming for this."

It is Prudden's opinion that the great frequency with which the acute ulcerative disease is engrafted upon an old endocardial lesion would seem to indicate that in the human subject the absence of endothelium, or the roughness of the surface of the thickened endocardium, affords conditions of predisposition for the lodgment, and vulnerability toward the incursions of the bacteria, when once they gain access to the blood, similar to those produced experimentally in the rabbit by mechanical or chemical means.

Ulcerative endocarditis is not a frequent disease in childhood; out of two hundred and nine cases but four were under ten years of age.

The history of these cases usually begins with some evidence of embolic infarcta, either into the spleen, kidneys, or brain. Such a case was observed by Professor Osler: the boy was aged eleven, had two attacks of chorea. He rapidly improved under five-minim doses of Fowler's solution, given every four hours. The first sound was murmurish; eight months afterward the patient suffered a return of the chorea, a week after its return he had a febrile reaction, the temperature reaching 104° F. Child became unconscious, slight paresis of left side was noted, and death occurred six days after the commencement of the disease; a temperature of 106° was recorded before death. An examination of the heart was made, revealing irregular, soft, grayish-white vegetations in the mitral valves, infarcts in the spleen and kidneys, and a small spot of red softening in the right corpus striatum.

The symptoms of ulcerative endocarditis are peculiarly prone to be masked by the primary disease, or they may assume types and forms akin to other maladies. Recognizing this fact, authorities have named certain types of the affection as the *pyæmic*, *typhoid*, *cardiac*, and *cerebral* types.

Homolle's* case of a boy whose disease simulated typhoid fever, and then cerebro-spinal disorder, is of extreme interest. The child lived five days after admission to the hospital. Post-mortem revealed suppurative meningitis of the brain and cord, pneumonia of one lung, with marked recent ulcerative endocarditis engrafted upon old valvular disease. Heineman records a case in the *New York Medical Record*, ii., 1881, well worthy of notice here. The boy, æt. fourteen, was admitted to the hospital November 19, and it was stated that since the 17th he had suffered with pains in back and legs, chills, fever, anorexia, and vomiting. The bowels were constipated, tongue coated, temperature 105.2°; was rational on admission. An examination of the heart and lungs was entirely without diagnostic result. The next day the temperature in the morning was 103.4°; evening, 105.6°; fæces and urine voided involuntarily. In twenty-four hours an eruption appeared, which was purpuric, and first noticed on the face, extending to the legs and arms. Temperature was now 104.8°, pulse feeble, delirium marked; two convulsions followed each other rapidly, and the child died during the second seizure. At the autopsy recent vegetations were seen on the mitral, and at the apex on the anterior wall of the left ventricle a small cavity, probably due to necrosis and loss of tissue. Pericardium contained a sero-purulent fluid; a purulent exudation was noted in the brain, the meninges of cord were congested, opaque, and inflamed. Lower segments of both lungs were congested; kidneys showed abscesses, probably embolic in origin.

Heslop† records an interesting case to which one of us has

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* Bull. Soc. d'Anat., 1873.

† Med. Times and Gaz., vol. ii., page 245, 1856.

already called attention.* The girl presented no heart-murmur on admission, but the action of the heart was tumultuous and irregular. On patient's admission to hospital, she stated that she had had rigors, followed by flushes of heat, but never any rheumatism. She was a weak, anæmic girl, and died in convulsions. The part of the endocardium immediately beneath the semilunar valves presented an irregular, ecchymosed surface, and had the appearance of being undermined, leading to the base of the aorta. At the attachment of the middle and anterior segment of the valves was a mass of fibrinous deposit the size of a small walnut, surrounding a cavity, containing a recently-formed coagulum, pus, etc.; it did not perforate. It was noticed that two days before death a continuous blowing sound was heard, accompanying and masking both first and second sounds. The patient had vomited at the commencement of the attack, and there was epigastric tenderness; rigors set in early, and the skin was jaundiced.

Moxon's † case was that of a child admitted to Guy's Hospital with suppurative periostitis, death resulting from multiple cardiac emboli, causing abscesses; the kidneys were also affected.

Chance ‡ speaks of a boy aged thirteen who, apparently in perfect health but with a scrofulous diathesis, was attacked one day immediately after eating with nausea and vomiting. The next day he became drowsy, and complained of feeling very sick, with pain in the stomach. Finally, complete coma set in with rapid and fluttering pulse, and occasional convulsive movements. He died in two days from the beginning of the attack. The autopsy revealed multiple cardiac ulcerations and perforations with pericarditis.

The consideration of our subject would, indeed, be incomplete without referring to the case reported by Drs. Tuckwell and Harris: § H. E., a boy, aged four years, was admitted to the Radcliffe Infirmary on November 25, 1884, and died on the 30th of that month. The child was so ill that no very detailed examination could be made. Child had been previously healthy, in fact had only suffered from an attack of measles. From this he did not entirely regain his previous robust health. He seemed, however, well until three weeks before admission, when he lost appetite, coughed, and had a hot, flushed face. On admission, pulse, 180; temperature, 101°; respiration, 54. The next day child became pale and cyanotic; temperature, 103°; respiration in the evening, 66; pulse, about 180; exact rate could not be determined. During the next twenty-four hours a faint apex murmur, systolic in time, was audible; remained about in this condition until death; the murmur, however, having become louder, the temperature more fluctuating, pulse irregular, coma, lung consolidated, and extreme diarrhœa; death closing the scene five days after admission.

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* "Ulcerative Endocarditis." J. M. Keating, M.D., Trans. Col. of Phys., 1879.

† Medical Times and Gaz., vol. ii., 1872.

‡ Lancet, London, vol. i., 1846.

§ Ibid., 1885, pp. 516, 517.

The post-mortem, made seventeen hours after death, revealed extensive ulcerative endocarditis, affecting the orifice of the pulmonary artery, a patent foramen ovale, and a communication between the right and left ventricles; numerous pulmonary infarcts were also noted. The heart was considerably hypertrophied, weighing four ounces; apex was formed entirely by right ventricle. Pulmonary artery was completely blocked by a firm thrombus, which was markedly adherent to the walls of the vessel; when this thrombus was torn away it left visible an extensive, ragged, irregular ulcer, which extended from the origin of the pulmonary artery upward a distance of an inch and a quarter into the vessel; it was not limited to one side of the vessel, but extended all around it. The semilunar valves appeared to have been destroyed completely. No tendency to perforation of arterial walls was evident.

Tricuspid valve was healthy; orifice dilated; endocardium of right auricle and ventricle healthy. Foramen ovale admitted a No. 12 English catheter; the two ventricles communicated by an opening in the upper part of the septum; these two openings were congenital. Mitral valve healthy, as were also the aorta and its valves. Pleuræ contained fluid, over their diaphragmatic surface were several punctiform hemorrhages.

Both lungs contained numerous recent infarcts. Spleen presented an infarct; weighed three ounces. Liver and kidneys healthy. No ulceration in any part of intestines, either large or small. Brain and membranes normal. The observers consider this case as one of *primary* ulcerative endocarditis of the pulmonary valves. The case during its course did not resemble in any way either the pyæmic or the typhoid forms of the disease.

The following case, recorded by T. Mitchell Prudden in the *American Journal of Medical Sciences* for January, 1887, p. 55, is well worthy of reference, particularly on account of the additional value of a microscopical examination in association with the clinical symptoms:

Mary C., aged fourteen years, had convulsions at eighteen months, scarlatina early in life, but no rheumatism, and was apparently well and strong. She was admitted to hospital February 22, 1886, for operation on club-foot. Cuneiform osteotomy was performed "antiseptically" on February 26, and for the first few days patient did well, but complained of pain in the foot. On March 6 there was an erysipelatous redness about the wound, and the temperature rose, but was reduced by antipyrin. She became delirious at times and unconscious; had twitching of muscles on left side, and died on March 10.

Autopsy.—Brain: meninges apparently normal; ventricles not dilated. Numerous small subpial hemorrhages, mostly quite superficial, on cerebral convolutions. A few hemorrhages were at the bottom of the sulci, and some of these involved small areas of the gray matter, which about them were soft and red. *Heart:* pericardium normal. Aortic and pulmonary valves normal. Scattered along the edges of the tricuspid and mitral valves, and nearly completely investing them, were irregular rows of larger and smaller white and red, firm, and closely adherent excrescences, some of them covered with loosely hanging red and white thrombi. On one of the papillary muscles of the left ventricle was a small eroded area loosely covered with a thin red fibrinous pellicle. In the left ventricle were also numerous small subendothelial petechiæ and one small abscess. Lungs normal. Spleen soft and large, and presented an irregular, grayish, friable area about one centimetre in diameter. Kidneys moderately large, capsule free, studded with numerous small, yellowish-white spots surrounded by zones of diffuse redness. On section, the cortices were thickened, light in color, markings obscure. Everywhere, both in cortex and medulla, the cut surface was thickly besprinkled with small yellowish-white spots and streaks. The spots were from one to three millimetres in diameter, and many of them were surrounded by a sharp red zone. There were also numerous sharply circumscribed red spots. Liver presented several larger and smaller white, irregular areas, some of them very soft, having the appearance of infarctions. Other organs appeared normal.

Microscopical Examination.—The tricuspid and mitral valves are irregularly thickened, the new tissue being mostly dense and firm, and consisting largely of basement substance. In the superficial portion, however, the cells are more abundant and fusiform, stellate, and spheroidal. The surfaces of these—for the most part apparently old vegetations—are irregularly bestrewn with larger and smaller masses of very small spheroidal bacteria, arranged in pairs or in large or small irregular clusters, or lying singly. They stain readily by Gram's or by the simple fuchsin method. These bacterial masses are in part covered, in part intermingled with granular matter, a few leucocytes, fibrin, and a few red blood-cells. Beneath the mass of bacteria there is in most cases a larger or smaller area of necrosis of the vegetation in which the nuclei remained unstained, and the basement substance presents a translucent, finely granular or structureless appearance. In many places there is an irregular zone around the areas of dead tissue in which there is a greater or less accumulation of leucocytes. In general, the necrotic process in this case is not advanced, involving only little spots here and there on the surface of the vegetations where the tiny masses of bacteria have found lodgment.

The lesions of the other internal organs were those common to pyæmic abscesses and infarctions. The kidney presented microscopically a variety of phases in its lesions corresponding to the varied gross appearance. In some places the larger, but particularly the smaller blood-vessels were plugged by masses of bacteria with little or no reaction of the tissue about them. In other places the bacterial masses were surrounded by a zone of dilated blood-vessels. Again, there was localized necrosis around the bacterial plug, while around this necrotic area there was sometimes simply a zone of enlarged blood-vessels or an accumulation of leucocytes, or both. In some cases the bacterial mass was closely surrounded by an accumulation of leucocytes so dense that the kidney-tissue for some distance around was entirely concealed, or completely broken down. The liver and spleen presented the usual effects of infectious emboli. The brain showed microscopically a plugging of the smaller blood-vessels in the hemorrhagic areas of bacteria, while around these plugs were either a simple zone of dilated blood-vessels or extravasation, or a localized breaking-down of brain-tissue; or, in a few cases, an extravasation of blood surrounded by a zone of purulent infiltration. Finally, in some places, the brain-tissue surrounding the bacterial embolus appeared to be simply necrotic, without hemorrhage, and without inflammatory reaction. The author concludes that the bacteria were the Staphylococcus pyrogenes aureus; these, he says, are the same species which Wyssokowitsch found in his one case, Weichselbaum in two of his four cases, and Zeigler in one case of this disease.

(To be continued.)

INTUBATION OF THE LARYNX.

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IN this consideration of the subject of my paper I shall seek to emphasize some of the points which others have made, rather than to contribute anything new to what has already been said or written.

First, therefore, I would call attention to the great advantage gained by operators through practice with the instruments upon the cadaver. As I have talked with those who have resorted to the operation, I find that at least one-half fail to introduce the tube in the first attempt upon the living subject unless they have had some practice on the dead subject. I find, too, that those experienced in laryngological examinations find greater ease in the first attempts with this instrument.

The removal of the tube is certainly much more difficult than its introduction, and special practice in this manipulation will have promoted the skill of the operator when he comes to this part of the operation.

I find that some writers dwell on the importance of the use of the largest tube possible. Of the expediency of this I have some question, though I would not wish to be understood to favor the use of a *small* tube. A large tube, tightly grasped by swollen mucous membrane, is more difficult of removal by the operator than a smaller one would be. It is true that some disadvantage could attend the occasional coughing out of the tube, which might occur with the smaller one, yet there may be advantage from this, as better opportunity will then be afforded to note the progress of the laryngeal lesion, and dysphagia may be relieved, while the tube may be re-introduced whenever symptoms demand this. Dr. O'Dwyer's personal experience ought here to be referred to, however. In upwards of one hundred and twenty-five cases he has never experienced difficulty from dislodgment of, and obstruction by, membrane in *primary* introduction of the tube, while this accident has occurred upon *reintroduction* of the tube.

The association of *reintroduction* of the tube and dangerous dislodgment of membrane may be coincidence, yet more experience will perhaps show that *reintroduction* is to be avoided because it leads to the accident.

The objections to intubation—theoretical and practical—which have been raised by operators and writers are:

1st. Danger of suffocation and shock from prolonged attempts to introduce the tube.

2d. Chance of mechanical injury to larynx or adjoining tissues from manipulations attending introduction.

3d. Danger from slipping of tube into trachea.

4th. Danger from slipping of tube into stomach.

5th. Ulceration in or below the larynx from pressure and irritation produced by the tube.

6th. Danger of the passing of food to the respiratory tract, through the tube in the larynx, and production of inflammation, as suppurative pneumonia.

7th. Danger from the presence of fragments of membrane in or below the tube producing fatal obstruction.

8th. Inability to feed the patient sufficiently while laryngeal tube is being worn.

Danger of suffocation and shock from prolonged attempts to introduce the tube.—With the mention of these possible results, the suggestion of how to avoid them is found. Dangerously protracted efforts will generally attend first experiences, and there have been instances in which, to an already very sick child, there has come in this way the added injury of severe nervous excitement and shock. An operator must be reasonable, and if the operation in a given case is difficult and prolonged, he must correctly estimate the local irritation and prostration produced, and desist from his efforts for a time, rather than inflict, as he might do, serious injury to the patient.

Chance of mechanical injury to larynx or adjoining structures from rude force attending introduction.—This objection is to be met by adhering rigidly to the rule of never using force in introducing a tube. Dr. O'Dwyer and others mention some remarkable instances in which the tube has wounded the larynx, has been pushed through the larynx into the surrounding cellular tissue, or has entered the paralaryngeal tissue without having been at any time in the larynx. These accidents cannot arise when force is not used, and with the larynx in a pathological condition, lined with membrane, or with its mucous surface swollen, the tube is not likely during its introduction to catch in the ventricle, this latter occurrence being the most probable way in which injury may be begun.

Danger from slipping of the tube into the trachea.—It is not to be denied, of course, that this circumstance would be a source of great danger and a serious complication, and in the reports of cases supplied from various sources I have observed two instances. It must be remembered, however, that the tubes have undergone considerable modification since first used, and now the head of the tube has sufficient size and prominence to prevent downward slipping. Furthermore, experience has indicated how to select the tube best suited to the age and size of child, and too small a tube is not likely to be employed.

Danger from slipping of the tube into the stomach.—This has been known to occur twice among reported cases, and while an accident not necessarily productive of danger, as the tube would in most cases pass harmlessly through the alimentary tract, still, serious results might follow. Dr. O'Dwyer mentions a case which followed the course just mentioned, the tube having been coughed into the mouth and swallowed while the child was half asleep. Dr. Hance, of the Nursery and Child's Hospital, had a patient who swallowed the tube, dying a few hours afterwards from diphtheria. In this case the string, which is generally removed after the placing of the tube, was left attached, as its presence produced no irritation in the fauces or at the back of the tongue. The child slept for some time, and when again examined the string had disappeared, having been swallowed, and then having served to guide the tube down the œsophagus. The accident is not likely to be common if directions as to use of the tubes are followed.

If the tube is dislodged from the larynx the expulsive expiratory effort which does this will generally throw the tube well into the mouth, or, much more probably, violently out of the mouth. The situation in regard to this is analogous to the not uncommon one of food or other foreign body in the larynx, and to have such foreign body thrown violently out of the mouth, when dislodged, is the common experience.

Ulceration in or below the larynx from pressure and irritation produced by the tube.—That ulceration may originate in this way is without question, and it is quite common for it to result from the ordinary tracheotomy-tube. When caused by the O'Dwyer tube it will be found on the mucous membrane just beyond but close to the end of the tube, or under the epiglottis.

When ulceration and villous growths follow the ordinary tracheotomy-tube they are usually just *above* it, in that part of the air-passages *through which no air penetrates* while the tube is being worn, and they first make trouble after the time at which the tube might be removed,—*i.e.*, when the primary laryngeal trouble is well. Let it be remembered that while an O'Dwyer tube is worn the entire respiratory tract is in use, and there is no space (like that between epiglottis and tracheotomy-tube) where mucus and blood can accumulate and by their presence and decomposition promote ulceration and granulation.

Finally, the danger of ulceration is reduced to the minimum by the exquisite finish of the tubes and judicious selection of the proper size. When ulcerations of the larynx and trachea occur under these conditions, they are superficial and not productive of serious injury.

Danger of bronchial or pulmonary inflammation from food passing through the tube into trachea and respiratory tract.—This danger has been raised in question, seriously, as one that might arise, though it has never required discontinuance of the method of treatment as far as I know. With a tube well adjusted, it is reasonable to believe that the epiglottis will remain pretty well on guard, though on taking food while wearing the tube some children cough in a way which shows that some of the food touches the edge of the laryngeal aperture usually untouched, and Dr. O'Dwyer, I believe, expresses the belief that liquid can find its way into the tube. Permitting the child to sit up straight when drinking, holding in his hands the utensil from which he drinks, lessens the cough mentioned, and, with the child's intelligent aid thus given, it is not probable that much food will enter the tube. Give the drink slowly, affording the child opportunity alternately to hold his breath while drinking and to cease drinking while breathing. Liquid cannot well *pour* through the long and narrow tube, and if no inspiration occurs while liquid is in the fauces it cannot be sucked into the trachea. Finally, if a little liquid gets into the trachea it can hardly do much mischief, and if much should enter, a paroxysm of cough would dislodge both tube and food, for the accident would occur in a given case, if it happened at all, very soon after the beginning of intubation, when the tube would most easily be ejected in this way.

There remains removal of the tube by operator if necessary.

The food given to a child so ill as to call for intubation will be liquid of course, and therefore not so irritating as to excite bronchial or pulmonary inflammation if it should obtain such contact.

Danger from the presence of fragments of membrane in or below the tube producing fatal obstruction.—This is undoubtedly the most grave danger. It will certainly happen in a certain proportion (comparatively small) of cases that at the time of the introduction or during the wearing of the tube there will occur more or less serious obstruction of it or of the trachea below it. Dr. O'Dwyer tells us that he has never seen the *primary introduction* of the tube attended by any displacement of membrane causing obstruction of its lumen, or the lumen of the trachea, though he has seen the *reintroduction* of the tube followed by this obstruction.

How shall this danger be met? In the great majority of instances the case will take care of itself, and a paroxysm of cough will be excited, and the tube, with the obstructing membrane, will be coughed out. If this does not occur, the tube must be removed by the operator.

In connection with this danger one point regarding the introduction of the tube must be closely observed. The tube should be pushed *as far down as it is to go*, and held down by the finger while the obturator is being removed.

If this order is not observed, and the tube is given a final downward push *after* removal of the obturator, this last slight descent of the lower open end of the tube can easily strip off enough membrane to cause obstruction at that point. Remembering that the accident of obstruction generally occurs with the introduction of the tube, it will be seen that it fortunately happens when the operator is present.

The introduction of the tracheotomy-tube is not free from this danger.

Danger from inability to feed patient sufficiently while the laryngeal tube is being worn.—Difficulty in feeding has sometimes been experienced owing to the rather long and rigid tube interfering, by its proximity to the pharynx and œsophagus, with the physiological performance of the function of swallowing. No serious difficulty has thus far occurred. The best way to meet this trouble is to have the patient sit up, and, as far as is practicable, permit him to feed himself.

In closing, let me say that intubation does not compete with tracheotomy. The operations are not on the same level.

Intubation, if successful, will obviate the need of tracheotomy. If unsuccessful or apparently dangerous, and abandoned in a given case for any of the reasons mentioned, tracheotomy can be performed as readily and with as good prospect of success as if intubation had not been performed.

Parents will consent to intubation when they may not allow a cutting operation like tracheotomy.

Let us, then, try it fairly, not expecting marvellous results, —let us try it in the same spirit as the surgeon, who, with a case of aneurism before him, would resort to and fully test the value of compression before resorting to the ligature.

ABSCESS OF THE LUNG.

A Clinical Lecture delivered at the Children's Hospital, Philadelphia,

BY ARTHUR V. MEIGS, M.D.,
Physician to the Hospital.

REPORTED BY WILLIAM H. MORRISON, M.D.

GENTLEMEN,—You have seen this child before, but I show him to you again, in order that we may more fully study his present condition and endeavor to make a precise diagnosis. We have been able to obtain but very little information in regard to the history of the case. The boy is eight years old, and has been sick for the past three years. His illness began with an acute attack of some sort, and his mother states that he had an abscess from which a great deal of pus was discharged. This is all that we have been able to learn of his history, and I shall now lay before you the results of a careful physical examination, which I made yesterday. In examining a child of this age, particularly where you desire to make a full and careful investigation, you may follow the same plan that it would be proper to pursue in dealing with an adult.

I have told you that ordinarily, in examining children, you should begin by ausculting, and then proceed to the other methods of diagnosis, so that the crying of the child may not interfere with your work. Yesterday I had the child stripped, and carefully examined the chest with the following results:

Inspection showed the child to be fairly well nourished. The right shoulder was seen to be lower than the left, the latter appearing to be elevated. The left side was evidently smaller than the right. The spine slightly curved, with its convexity to the left. The impulse of the heart was seen in the natural position, and it was neither heaving nor increased in area.

On palpation, the heart's impulse was found to be of normal force. During expiration a slight pulsation could be felt over the base of the heart. (In regard to this point I would say that some writers on disease of the heart state that any pulsation over the base of the heart is a sign of aneurism or of enlargement of the auricles. This I take to be a mistake, for commonly enough in persons with thin chest-walls, careful palpation continued through several respiratory acts will reveal a faint pulsation perceptible as high as the third rib during expiration.) On forced inspiration there was not found to be any very marked difference between the expansion of the two lungs: the right base probably expanded slightly less than the left.

Percussion one inch to the left of the sternum showed the vertical dulness to begin at the third rib, and the note became flat at the fourth rib. The transverse dulness at the level of the fourth rib began at mid-sternum and extended outward to the nipple, a distance of two inches. Over the apices of the lungs anteriorly the percussion resonance was found to be good and equal. When the third interspace on the right side was reached, marked cracked-pot sound was heard when percussion was practised with the mouth open. From this point downward the dulness gradually increased until the liver area was reached. Over the apices of the lungs posteriorly the percussion sounds were fairly good. Over the middle portions the sounds were good and equal, unless that upon the right was slightly tympanitic. Over the right base there was universal dulness, while over the left base the resonance was fairly good. At the left apex in front the vocal fremitus was natural, at the right apex it was found to be relatively slightly feeble. Posteriorly, there was no percepible difference at the apices. At the middle portion and at the base upon the right side it was markedly diminished. The vocal resonance at the apices in front was about equal, lower down on the right side it was diminished. Posteriorly, the vocal resonance was equal at the apices, but over the lower portions of the left side it was normal, while upon passing downward over the right side the sounds were found to become markedly reverberating.

Auscultation showed the heart-sounds to be normal at the four areas. At the right apex in front the expiration was distinctly prolonged, and the sounds became harsh upon passing downward. Posteriorly, over the middle and lower portions of the right side the sounds were, at the time the examination was made, somewhat harsh and quite feeble, both inspiration and expiration being distinctly audible, and there was occasionally slight crackling. On other occasions, after cough and expectoration, there has been heard marked amphoric respiration over this region with an increase of râles. The hepatic dulness in the nipple line was found to begin in the fifth interspace and extend to the costal border, or slightly beyond. (No positive deviation from the normal condition being detected.) In the splenic area there was a slight but marked increase in dulness, which extended upward from the costal border in the anterior axillary line fully three inches. The abdomen presented no unnatural appearance. There was seen a slight petechial rash over the chest, almost entirely confined to the left side, and extending over the pectoral muscles in front and the scapula behind. The finger-ends were seen to be distinctly clubbed. The temperature in this case has, as a rule, ranged between 97° and 99°; upon one occasion only did it go above this point, reaching 101°.

Since the patient has been in the hospital he has expectorated daily a large quantity of a greenish-yellow pus; with a violent spell of coughing he will bring up a large quantity of this pus, and then a number of hours will pass without his coughing at all. The cough comes in paroxysms, which are quite violent and resemble those of whooping-cough, except that the paroxysm does not terminate in an inspiratory whoop. During an attack the child will cough until he becomes very red in the face, and the pus comes up in such quantity that it runs from his mouth in a stream. This is very fetid, and when he has one of these spells of coughing the breath also is so offensive that it can be smelled at quite a distance.

What, then, have we learned in regard to the patient's condition from the physical examination which has been made and the brief history which I have detailed? The physical examination reveals that there is no discoverable disorder of the heart, and that the left lung is in a fairly healthy condition. In examining the right lung we find that when we reach the region of the third rib there is marked dulness upon percussion with cracked-pot sound, which increases until the liver area is reached, and that over the first mentioned area the respiratory sounds are harsh. Upon examining the posterior part of the right lung, we find the apex to be nearly normal, but when we reach the middle portion, and still more, when we pass downward to the base, it is found, when the child has not coughed for some time, that the respiratory sounds present no very marked deviation from the normal, except that they are harsh, that the expiration is prolonged, and that the sounds are remarkably feeble as compared with those upon the other side. There is also dulness on percussion over this area. The vocal fremitus is decreased and the vocal resonance is increased. After the child has had a violent coughing spell with the expectoration of a large quantity of pus, we find over this area marked amphoric breathing and diminution of the dulness on percussion.

It seems to me that these physical signs, taken in connection with the fact that large quantities of pus are expectorated, and that the finger-ends are distinctly clubbed, point to the existence of a cavity in the chest, in which pus collects, and from which it is discharged from time to time. Such a cavity may result from several different causes. It might be an empyema with rupture of the lung and discharge through the bronchial tubes. Again, it might be the result of bronchitis, with secondary bronchial abscesses, as referred to in Meigs and Pepper, who quote from Dr. Gairdner, of Edinburgh, who describes bronchial abscess as a secondary result of bronchitis. Abscess of the lung not infrequently results from the impaction of a foreign body in a bronchus, and Eustace Smith, in his book on "Disease in Children," describes such a case in detail. Again, it may result from pneumonia, with simple break-down of the lung as a consequence. This mode of origin is one which has been disputed; Hilton Fagge does not believe that abscess occurs as a result of simple pneumonia. It is not easy to draw a positive distinction which shall hold good under all circumstances from a clinical stand-point between abscess of the lung and gangrene. Zeigler, in his book upon pathology, considering the subject from that point of view alone, says that abscess is simply a process of necrosis, while gangrene is necrosis plus decomposition, and that this decomposition has always as a concomitant the presence of micro-organisms in the tissue undergoing destruction, and further, that the micro-organisms have a direct causative influence in the production of the result. Another distinction that can be made is to say that an abscess exists when a pyogenic membrane is present, and that gangrene exists if there is rapid destruction of lung with decomposition. I think, however, that neither of these distinctions will hold good from a purely clinical stand-point, for there may be found micro-organisms when the case is not distinctively one of gangrene, and again a pyogenic membrane may line a portion of a lung undergoing destruction, other portions of which are unmistakably gangrenous. Thus, then, there can be no distinct line drawn between the affections when considered in a purely clinical light. Among various authorities whose works I have consulted there seems to be a good deal of lack of clearness upon this point, several authors not even treating of abscess of the lung as a distinct disease, but confining themselves to an article upon gangrene of the lung.

With regard to the origin of the abscess in this particular case, it appears to be sufficiently plain that it did not arise in a pleurisy going on to empyema, with rupture through the lung and the discharge of the pus by the bronchial system. The physical signs are not those which would indicate such a mode of origin. I have seen cases of empyema with rupture of the lung, and have watched them for several years until death occurred, and in them the physical signs were very characteristic of what was taking place. If you see such a case early you will find the ordinary signs of pleurisy with effusion, and even if it is only in a later stage of the complaint that you are enabled to examine the case, you will still find the dulness on percussion, either as the result of the presence of purulent fluid in the thoracic cavity or of thickening of the pleura, a result of nature's effort to repair the empyema. At a still later stage considerable distortion of the chest, with contraction of the affected side and overlapping of the ribs, will be found. In the child I show you, the affected side is larger than the healthy one. I think, then, we may conclude from the physical signs and from the history that this is not a case originating in empyema, on the other hand all the indications seem to point towards pneumonia with secondary destruction as the mode of origin. It is, of course, impossible at this time to say whether the pneumonia was croupous or catarrhal; most probably it was of the catarrhal variety, coming on in the course of some acute sickness. I consider the case to be one of abscess or gangrene as we may choose to term it, but it seems to me to partake more of the nature of abscess. Meigs and Pepper in their article on pneumonia report having seen three cases in which abscess of the lung followed an attack of pneumonia: in all three pneumothorax occurred as a consequence of rupture of the abscess. In two instances the patients were young children and died; in the third, a boy of eleven years of age, the abscess resulted from an attack of secondary pneumonia, and came on during the course of what they term "bilious remittent fever." This boy, after a long and serious illness, finally recovered. The history of such cases is of more value than the somewhat speculative discussions in which some authors have indulged themselves in regard to the modes of origin of abscess of the lung or its possibility. We have the distinct history of a case of pneumonia followed by abscess, expectoration of pus, rupture into the pleural sac causing pneumothorax, and recovery of the patient. Fuller, in his book upon the lungs, speaks of gangrene sometimes terminating in recovery. It would be better, however, to describe such conditions as abscess, for it seems hardly likely that cases of true gangrene of lung-tissue would terminate in recovery. Walshe mentions abscess of the lung, and states that it may terminate in recovery. Wilks and Moxon, in their work upon pathological anatomy, say that gangrene does occur as a direct consequence of pneumonia, and they further say that in the case upon which this opinion is based it is possible that the pneumonia may have resulted from epidemic influenza. Flint, in his work on the respiratory organs, gives no special description of abscess of the lung as a distinct disease, but says in his article on gangrene that "abscess following pneumonitis offers the same physical signs as when gangrene results from that disease."

With regard to prognosis, it is a very difficult matter to even guess what the result will be. This child's general health is so good and he is so well nourished as to encourage us to be hopeful of his final recovery.

With regard to treatment there is little called for, except to support the general strength and use preparations of tar or small doses of carbolic acid and treat symptoms as they arise. There is, however, one other curative measure which might become advisable. I refer to some operative procedure. In a late number of the *Lancet* there is described a case of abscess causing extensive destruction of the upper anterior portion of one lung, in which a portion of rib was resected and the abscess thereby allowed to discharge freely with the best results, the patient improving in health very much. It seems to me that if after a time this child should begin to lose ground, it would be advisable to attempt such an operation, for if he once begins to lose ground the case can have but one termination.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Kübner: Hereditary Disposition to the Formation of Vesicles. *Arch. f. K.* [from *Deutsche M. Woch.*, No. 2, 1886], Bd. viii. H. 1.)

The form of disease described by the author is a rare and heretofore undescribed hyperkeratosis of congenital origin. It occurred regularly during the summer months in a mother thirty-six years of age, and three of her sons, respectively fifteen, twelve, and four years of age; beginning in early childhood with each child. The vesicles were developed upon surfaces which were submitted to pressure, especially upon the soles and backs of the feet, between the toes, under the garters (upon the legs), and in the mother's case under the corsets. In the latter location it was conspicuous along the line of pressure if the patient were occupied in sewing for a number of days in succession. First a red band of irritation appeared, and by the following day a number of smaller or larger vesicles were apparent. After one or two days more their greatest development would be reached, and the patient would evacuate them of their clear, watery contents. Then they would disappear, leaving no scar. The development was similar in character upon the soles of the feet, except that the walls of the vesicles were thicker; they never ruptured spontaneously, and contained a thick, jelly-like material. Upon the back of the feet as well as upon the soles the vesicles underwent a secondary suppuration of slight intensity, with superficial ulceration. During the woman's childhood she was unable to walk to school during the summer on account of these vesicles, and could do no work with her hands, as that would excite their development. She was still suffering when brought to the professional notice of the author, being unable to walk during almost the entire summer, though in winter she was not affected at all. While suffering from typhoid fever the vesicles disappeared for the time from the mother and the eldest son, and also from the youngest son during an attack of scarlatina, which proved fatal. When the author gently rubbed the back of the feet of the mother and the oldest son with his thumb for three to five minutes, the vesicles would be developed before his eyes, but the skin did not seem to be disturbed below the Malpighian layer, and both the redness and the vesicles which followed the rubbing would quickly disappear. It could not be ascertained that the woman suffered from urticaria fœticia or any other form of angio-neurosis, or that her parents or brothers and sisters suffered in any similar manner. Microscopical investigation of the tissue of the vesicles showed no pathological changes, no evidence of inflammation, and therefore the diagnosis of hereditary dermatitis bullosa of Valentine could not be made. Instead of the latter, the author concluded to apply to the condition the name epidermolysis bullosa hereditaria. Little is offered with respect to the treatment of this disease. Baths and ointments and powders of all kinds produced no perceptible improvement, and the author finally limited himself to cauterization and antiseptic treatment of the evacuated vesicles. Arsenic had previously been used without benefit. A. F. C.

Burchardt: The Treatment of Eczema. (*Arch. f. K.* [abstracted], Bd. viii. H. 1.)

The author has had the opportunity for many years, in his clinic for diseases of the eye, of observing many cases of eczema, in which the eczema plays an important part in producing inflammatory disease of the ocular connective tissue and the cornea. The eczema in these cases is not always of an innocent character, but may lead to infiltration, swelling, prolapse of the iris, destruction of the cornea, and finally blindness. He recommends the following treatment: the eczematous crusts are softened as much as possible, the hair is cut short upon the diseased patches, and then a three-per-cent. solution of nitrate of silver is applied, the application being also made to the lids. During the application the patient's eyes must remain closed. Immediately afterwards the surface must be dried with a linen napkin. Then a second application is made with a four- or five-per-cent. solution, and the surface again dried. This procedure must be carried out daily at first, and subsequently every other day. This operation is sometimes very painful, and may produce such copious hemorrhage that the nitrate of silver is neutralized and becomes ineffective. A cure will be hastened by occasional applications of a thick layer of an ointment consisting of vaseline, ten parts; oil of cade, one and one-half parts; and zinc ointment, two parts. The ointment will prevent the formation of new crusts, under which the eczematous discharge might collect and cause further irritation. Instead of applying this ointment to the eyelids, we may substitute the white precipitate ointment.

A. F. C.

Werner: Treatment of Diphtheria by Sublimate. (*El Progreso Ginecologico*, August, 1886.)

Seventeen cases were treated, with two deaths, both the children being moribund when they were first seen. For children eighteen months old or less it is advisable to use fifteen milligrammes of the sublimate daily, dissolved in one hundred and twenty grammes of distilled water. During the day a sufficient quantity should be given every twenty or thirty minutes; during the night the drug should be given two or three times, but in larger doses than during the day. For children from a year and a half to seven years of age, thirty milligrammes daily should be administered in one hundred and eighty grammes of water, after the same method as the foregoing. For children more than seven years of age, forty-five milligrammes should be given in two hundred and forty grammes of water. For local application ichthyol is recommended three or four times daily.

The child should be kept perfecfly quiet; only milk should be used for food, wine and sugar being avoided. If the fever is high, antipyrine should be given *per rectum.* Upon the third day there may be symptoms of salivation, and then the solution must be gradually diluted. Poisonous effects were never observed by the author. A. F. C.

Engel: Concerning the Time for Ligation of the Navel String. (*Arch. f. K.* [abstracted], Bd. viii. H. 1.)

The question as to the proper time for ligation of the navel string still remains unsettled. The investigations of the author, which have been of a practical character, seem to favor its late ligation. By this means from one-quarter to one-third of the entire quantity of blood which circulates in the body is added to the circulation; and this is to the advantage of the new-born infant. The author believes that by following this plan the child is more quiet, its skin is redder, it goes to sleep sooner, and requires nourishment later than under the customary plan.

With reference to the influence which late deligation exercises upon the vitality of new-born infants, the author made some investigations as to the percentage mortality of premature children. During the first four years of his service at the Klaussenburg (Hungary) obstetric clinic, ligation was practised immediately after birth. Out of ninety premature infants, seventeen died during the first ten days. During the last four years of his service there have been seventy-four premature births, late deligation being practised; of this number only seven died during the first ten days. If the mother had fever, the child was placed in the hands of a wet-nurse. The decided difference in the mortality during these two periods is attributed by the author to the advantage of the late method of ligation. This method also plays a part in the treatment of asphyxia. The additional quantity of blood which the new-born infant receives by this method facilitates resuscitation. The slightest pulsation in the navel string is in these cases to be considered as an encouraging symptom. The real cause for the transfusion of blood from the placenta into the body of the new-born infant, in the late method of ligation, is to be found neither in the aspiration of the child's thorax nor in the contraction of the uterus, but in the child's cardiac activity on the one hand, and the capacity for contraction of the vessels of the navel string and the placenta on the other. The heart-activity and the contraction of the vessels are forces which work in opposition to each other. The former holds the circulation under control; contraction in the artery of the cord takes place earlier than contraction in the veins; the result of this is that the exit of the blood from the child's body is prevented a long time before the entrance of the blood through the veins ceases. A. F. C.

Stadtfeldt: The Medico-Legal Significance of Internal Hemorrhages in New-Born Infants. (*Arch. f. K.* [abstracted], Bd. viii. H. 1.)

The author has collected all the cases of death from internal hemorrhage among new-born infants which have occurred during the past twenty years in the Copenhagen lying-in hospital. Two of them are of especial interest, the children having been delivered by operative means, which were attended by copious cerebral hemorrhages. In one, version was employed; in the other, the forceps. In the first case the child was asphyxiated when born, but lived until the following day. The autopsy showed that the lungs were insufficiently expanded with air, ecchymoses in the serous covering of the thoracic organs, and extensive hemorrhage in the lower parts of the cerebral membranes. The child, which was delivered with forceps, and whose navel string was twisted around him, was found dead in his bed on the fourth day. At the autopsy a clot as large as a walnut was found in the pia mater, at the base of the left frontal lobe; and at the base of the brain there was about a teaspoonful of fluid blood. There were no ecchymoses, there was no atelectasis. With these cerebral hemorrhages we occasionally see symptoms of cerebral pressure, etc. Hemorrhage into the kidneys was found, in the author's search among twenty-five thousand cases, only twice. In both of the cases version had been performed with great difficulty, and extraction by the feet. In neither of them was the renal hemorrhage associated with fracture of the vertebræ, though this accident occurred five times in connection with difficult extraction by the feet. In his search the author also found reports of two cases of difficult extraction in which the liver was ruptured.

Lutard: Questions for Pasteur to Answer with Respect to Hydrophobia. (*Jahrb. f. K.*, Bd. xxx. H. 3. [from *Jour. de Méd. de Par.*, 1886].)

The author quotes Vulpian in his disapproval of the employment of the inconclusive inferences of experimental physiology, instead of the facts of pathology, and then proposes the following questions, which, he declares, have never been answered:

1. Was the dog which did the biting really rabid?

2. Was the patient who was treated after Pasteur's method really affected with hydrophobia?

As an instance of the supposed cases of hydrophobia, a six-year-old boy was bitten in the face, in November, 1884, by a dog, the flesh being unmistakably lacerated. It was said that the dog was rabid. Two hours after the injury the wound was cauterized by a physician, who immediately telegraphed the facts in the case to Pasteur, and asked his advice. He replied that the treatment which had already been given was sufficient, and that anything further would be superfluous. Nineteen months later the child was still perfectly well. The author submits that if Pasteur had not counselled against his special form of treatment, the child might have been registered as one of the large number who have been cured by that method.

3. How does it happen that since Pasteur announced his method of treatment the number of cases of hydrophobia has increased a hundred-fold? In Prussia the reported cases of hydrophobia for the years 1881–85, inclusive, were respectively ten, six, four, one, and *none*. In Austria, from 1879–85, the deaths were, for the successive years, thirteen, eight, five, seven, two, and ten.

4. What is rabies in the wolf?

5. Why is rabies more dangerous according as the bite is deeper? The contrary is true in other forms of inoculation.

6. Why is there neither local nor general reaction after inoculation with the poison of rabies?

Foster: The New Methods of Treating Whooping-Cough. (*Medical Record*, Kansas City, January, 1887.)

For a long time the writer has depended upon belladonna, with only a few satisfactory results. From the treatment of twenty-five cases, he has come to the conclusion that, by the use of cocaine and resorcin sprays, we can cut short the course of the disease (seven to nine days) and give immediate relief to the sufferings of the patient. In his treatment he uses from two to eight grains of muriate of cocaine to the ounce of water, according to the violence of the paroxysms; resorcin, two to four grains to the ounce of water,—the cocaine spray every two hours, the resorcin every three hours. The first applications of the sprays may cause retching. He believes pertussis to be a parasitic disease.

Mouillot: An Outbreak of Diphtheria in a School. (*Brit. Med. Jour.*, March 19, 1887.)

Eighteen children were affected, and there was a remarkable difference in the severity of the cases. In seven there were typical appearances of diphtheria, and three were very severe both as to constitutional and local symptoms. In ten cases there were no means of distinguishing the appearances of the tonsils and pharynx from those of ordinary tonsillitis. In three cases there was laryngeal diphtheria, and two of these proved fatal. Only one case began in the larynx. In sixteen cases the cervical glands were enlarged; in two cases diphtheritic paralysis followed.

The epidemic was traced to a foul-smelling, choked drain, immediately under the dormitory window.

The writer considers that even the mildest cases were genuine diphtheria for the following reasons:

1. They occurred at the same time and were apparently due to the same cause.
2. One of the least severe cases was followed by paralysis.
3. The cervical glands were enlarged.
4. The mildest cases were put in the same ward with the severe ones, and none contracted a severe type. While on the other hand a child in another ward, who was convalescing from typhus, contracted diphtheria from these cases, so that its infective nature was established.

In the discussion upon the paper, the ground was taken by several gentlemen that other forms of sore throat than diphtheria could be produced by imperfect drainage. Further, that genuine diphtheria was not so common as is generally supposed. True diphtheria was indicated by the constitutional symptoms and sequelæ rather than by the throat manifestations.

Dr. A. W. Foot laid down the following as being essential to the diagnosis of diphtheria:

1. Early and remarkable swelling of lymphatics.
2. Extreme fetor of the breath.
3. Albuminuria.
4. Subsequent paralysis of the muscles, or, worse still, the heart.

5. The mortality reaching at least fifty per cent.

The limitation of diphtheria to the forms of sore throat having the above conditions was concurred in by several other gentlemen present.

Ransome: The Duration of Infectiousness of the Different Contagious Diseases. (*Brit. Med. Jour.*, January 29, 1887.)

This paper was read in connection with the collective investigation of these topics by the British Medical Association. The following facts were established with reference to the time when the disease began to be contagious:

Measles was shown to be so in five cases before the appearance of the rash; in two cases at least two days before; and in one three days before the disease failed to be communicated to seven susceptible children. In one case it was conveyed four days before the rash came out.

Scarlet fever was communicated in four cases from twelve to twenty-four hours before the beginning of the rash.

Mumps was conveyed in one case one day before the swelling of the gland appeared.

Regarding how long the disease may be communicated by the patient. The facts given lead to the following conclusions:

Mumps, infectious for two weeks after cessation of the fever, or three weeks in all.

Measles, thirty-one days after the invasion.

Scarlet fever, four to seven weeks; longer in cases of complications, otitis, suppurating glands, etc.

Diphtheria, one case of direct infection was seen after six weeks.

The full report of the investigation committee will be awaited with interest.

Nasal Treatment of Whooping-Cough. (*Lancet* [Editorial], January 15, 1887.)

Of late the idea has been steadily gaining ground that this disease is due to a micro-organism, and that the site of its entrance into the system is the soft tissues of the nasal fossæ.

Upon these two ideas has been based a plan of treatment which has a rational look upon its surface, and better still appears to yield better results in practice than have been hitherto obtained. This consists in the early use of antiseptics or germicides in the nasal cavities. Numerous ones have been already suggested. Insufflation seems to be so far the favorite mode of their application. Iodoform, salicylic acid, and boracic acid are just now most in vogue. They should be reduced to very fine, almost impalpable powders before application. A simple puff-ball is an effective mode of introducing the antiseptic. Nasal douches may be employed in older children, the most effectual being one to five hundred of corrosive sublimate. Of course, great care must be exercised with a solution of such strength that none be swallowed. Weak solutions of alum and iodine have also been used.

Older children may be taught to take the powders as snuff. In infants applications may be made by a camel's-hair brush in the shape of ointments or glyceroles. They should always be preceded by a careful cleansing of the nostrils. Repeated applications are necessary to insure any degree of success.

One of the most highly recommended ointments is the following:

℞ Iodoform,
Eucalyptol, āā ʒi;
Vaseline, ℥i. M.
Ft. ungt.

There still remains a degree of doubt whether the theory of this treatment is correct; and admitting this, the beneficial results may come from the treating of the accompanying catarrh as such, and apart from any germicide action. Cocaine in four-per-cent. solution has been also employed.

The Use of Uncooked Milk, and its Relation to the Spread of Scarlatina and Diphtheria and Typhoid. (*Lancet* [Editorial], March 19, 1887.)

The writer mentions the increasing frequency of late of epidemics of these diseases traced to impure milk. At one time it was thought that the matter of pure milk required only cleanliness in a dairy and in those who had charge of the milk-supply. The mere fact of milk coming from a country dairy has been regarded as a guarantee of its wholesomeness. As a matter of fact it seems that the danger is greatest in dairies most remote. For here the first cases of such diseases are often not recognized, when occurring in the families of those having the care of milk.

Of late it has been conclusively shown that the cow herself may suffer from a disease which is now rarely regarded as of any importance among dairymen, which may give to the milk at the moment of entering the pail the power of producing scarlet fever in those who consume it in a raw state. The habitual boiling of the milk before consumption is urged as the only safeguard. This should be done immediately on receiving the milk from the milkman. If it is then set away upon ice for five or six hours before using, the taste, which is usually regarded as an objectionable feature, will scarcely be noticed.

[The importance of this precautionary step as a means of prophylaxis of summer diarrhœa can scarcely be overestimated.—REP.]

II.—MEDICINE.

Mackenzie: Collective Investigation Committee's Report on Chorea. (*Brit. Med. Jour.*, February 22, 1887.)

The report is prepared by Dr. Stephen Mackenzie, and is based upon returns made from four hundred and thirty-nine cases. It presents a mass of collated facts regarding this disease such as never before have been published. So much material is given that it cannot be abstracted, and we will notice only some of the most important parts.

The cases show that the disease occurs among females three times to once in the male sex; that it is much more common in the middle and lower classes; that rapidity of growth is not an important factor in etiology, and that in only six per cent. of the cases was it associated with enfeebled mental powers.

It was often associated with derangement of the sexual functions in the female. In sixty-five cases over ten years of age, menstruation had not yet appeared, in thirty-two it was irregular, and in forty-four it was regular. Seven cases in puerperal women were among the list.

The association of the disease with rheumatism has been carefully brought out. In one hundred and sixteen there was a history of acute articular rheumatism, in sixty-two pains of a more or less distinctly rheumatic character, and one case had chronic rheumatism. In addition, some twenty-six cases developed rheumatism either during the attack of chorea or subsequent to it. This would give one hundred and forty-three as positively rheumatic, and adding the sixty-two cases, some of which were rather indefinite, the proportion would be raised to two hundred and five in four hundred and thirty-nine. Among other antecedent illnesses, scarlet fever had existed in one hundred and twenty-nine cases, measles in one hundred and sixteen, both these diseases in thirty-four, and anæmia in ninety-two.

We infer from the report that the patients had had these diseases at some time previously, and not the chorea developed as a sequel to them.

The duration of the disease was from two to three months in fifty-seven per cent. of the cases where it was recorded.

Nine cases were fatal, and three more died subsequently to the reported attack. The majority of the cases died from cardiac disease, a few from rheumatism, and one from embolism.

The condition of the heart before, during, and after the attack is one of the most interesting points of inquiry. Some cardiac disease of a more or less definite character existed in one hundred and forty-one cases, or thirty-two per cent. In addition to these were seventy-three cases in which there was either functional derangement of the heart or changes of an indefinite character, probably not organic.

Of the one hundred and forty-one cases of definite heart-disease, forty were known to have been unaffected prior to the attack, and of this number the disease persisted after it in twenty-four. Of the forty, again, twenty-two had not rheumatism either before or during the attack; thirteen had rheumatism before, twelve during the chorea, and five suffered from vague rheumatic (?) pains. Of the one hundred and thirty-five cases in which heart-lesion was mentioned, mitral regurgitation existed in one hundred and thirteen cases, all others being comparatively infrequent.

Fourteen cases were examined at intervals varying from a few months to three years after the attack. In five there was no change in the condition of the heart; in four there was decided improvement; two were worse; two had died; in one the disease had disappeared; and one showing no signs of heart-disease, either during or immediately after the chorea, was found to have a systolic murmur and hypertrophy three years afterwards.

The subject of treatment is unfortunately one of the most unsatisfactory of the points of investigation.

The drugs employed embrace a great variety; those most used were arsenic and iron. Although so much used, in only eleven cases was striking benefit seen from arsenic. So much depends upon the manner of its administration in chorea that we can scarcely draw conclusions from these results, inasmuch as this is not furnished. Iron was seldom used alone, so it is impossible to say how much benefit was due to it.

Salicin and salicylic acid, or its salts, were quite largely used; in some severe cases strikingly beneficial effects were seen where other drugs had been long used without change.

One cannot read this accurate report of this careful and painstaking investigation without great admiration for the system which has made such results possible.

Pathological Anatomy of Chorea. (*Brit. Med. Jour.* [Editorial], March 5, 1887.)

The comments here made are called out by the publication by Nauwerck of an autopsy in a case of chorea minor which ended fatally by an attack of apyretic pneumonia. The peripheral nerves were found normal. The changes in the central nervous system were all microscopic; they are arranged under three heads:

First, scattered patches of infiltration of round cells into the perivascular sheaths; this was chiefly in the medulla and pons.

Secondly, points of hemorrhage in the peduncles of the cerebrum, the inner capsules, medulla, and pons. No emboli were found.

Thirdly, degeneration of the nerve-fibres, most marked in the cervical portion of the cord, diminishing gradually down to the lumbar region. These degenerated fibres occupied no particular tract, but were scattered.

The degenerative changes mentioned were thought to be the explanation of the inco-ordination of movements. The round-celled infiltration was a sign of inflammation. Nauwerck thought some cases of chorea were infectious, the poison being localized in the central nervous system.

Smith: Cardiac Complications in the Rheumatism of Childhood. (*Canada Med. and Surg. Jour.*, January, 1887.)

The histories of seventeen cases of rheumatism in children show that six had organic valvular disease, four had a distinct mitral regurgitant murmur, one a double aortic, and one all the symptoms of endocarditis.

According to Senator, the younger the patient the greater risk of the heart becoming affected.

Children often have slight attacks of endocarditis in connection with rheumatism, in which there may not be sufficient exudation on the valves to produce a bruit.

Acute endocarditis in children causes less local and constitutional disturbance than in adults, and is, on this account, much more likely to be overlooked. In four of the seventeen cases the cardiac lesions came on after repeated attacks of rheumatism.

Frequently, we find chorea associated with the rheumatism of childhood. Often chorea is primary and the heart-affection secondary, or, *vice versa*, both may occur at the same time. Again, chorea may appear first, then rheumatism, and lastly the heart-affection; but generally the rheumatism is first, next the chorea, and the heart-affection afterwards.

The cause of rheumatism of childhood may be ascribed to improper care in diet and dress.

Commence medical treatment by a small dose of Rochelle salts, followed by soda salicylate, sometimes combined with oil of wintergreen.

If there is any evidence of a bruit, the most absolute and continuous rest in a horizontal position must be enjoined.

There is evidence that if the heart can be rested for several months, in every possible way, permanent lesions may be avoided after the endocarditis of children. Distinct cardiac valvular murmurs in children have entirely disappeared after a prolonged course of iron, cod-liver oil, and digitalis combined with small doses of nux vomica.

Forchheimer: The Prognosis of Croup. (*American Lancet*, February, 1887.)

A point in treatment which affects prognosis is, Shall tracheotomy be performed? For a good prognosis the operation should be performed in every case, provided the physician has assured himself that laryngeal stenosis is present and is dangerous to the patient. Seven of the writer's cases were not tracheotomized, and but one recovered. The remaining twenty-five cases were operated upon, and six recovered. As far as the author's experience goes, intubation fulfils all the indications of tracheotomy in laryngeal stenosis. In one of his cases of intubation the tube was swallowed from a faulty method of securing it. General considerations have a very important bearing on the prognosis. Age, power of resistance, temperature, intensity and extensiveness of the affection must be carefully weighed. Epidemics in which mortality is great. The further a child has gone into the stage of asphyxia, the less are its chances for recovery. Much depends on auscultation of the lungs. The presence of albumen in large quantities, as much as five per cent., makes the prognosis grave, especially if there are blood-clots found. If after the operation the cough becomes dry, or the expectoration ceases, we must fear the worst. A sudden rise of temperature, 103–104° F., is a bad sign, and usually means a membranous deposit. Increase of respiration is suspicious. After removal of canula there are local causes which influence our prognosis,—diphtheritis of wound, hemorrhages, and abscesses. Remote causes also, such as septic troubles, followed by anæmia, different forms of cardiac disease, paralysis, nephritis, and glandular disease.

Eichberg: Two Cases of Intubation of the Larynx for Membranous Croup. Tracheotomy for Recovery of Tube. (*Cincinnati Lancet-Clinic*, January, 1887.)

A case of diphtheria developed croup on the third day, and as the patient showed signs of asphyxia, it was decided to use one of O'Dwyer's tubes. The first tube was immediately filled with pus and exudation, and had to be withdrawn by the thread, which had not been yet detached. A smaller tube was introduced, which was coughed up in a few moments. A third time, a tube two and a quarter inches in length was used successfully. On introducing the last tube, all symptoms of asphyxia disappeared as if by magic. In half an hour the child was sleeping quietly. During the night small pieces of membrane were expelled. The ingestion of fluids (the only form of food allowed) caused coughing spells.

During the second night following the intubation the patient expelled a cast one and a quarter inches in length.

Difficulty in swallowing and coughing increased with the length of time that the tube remained in the larynx. The tube was removed on the fifth day; the non-expulsion of membrane, together with lowering of the pulse and temperature, indicating the time for its removal. In the removal of the tube, the retractor was twice engaged in the tube and as many times slipped, owing to the presence of some mucus and to the weakness of the spring in the retractor (an improved retractor has since been made by Dr. O'Dwyer). After the second attempt the head of the tube became wedged between the cords. A third attempt was made (with child's head dependent) to extract the tube; by this effort the tube was driven by the retractor into the trachea. Tracheotomy was then resorted to, and the tube, which could not be pushed back, was drawn through the tracheal opening.

Dr. Eichberg cites a second case which died on the sixth day after intubation, from extension of the membrane into the finer bronchial tubes.

Intubation has the following advantages over tracheotomy:

1. It requires about half a minute for its insertion.
2. Parents will more readily give their consent.
3. No anæsthetic is required.
4. It creates no new points for reabsorption of diphtheria or pyæmia.
5. Secretions of the larynx do not stick to the metallic tube as to the rubber tracheotomy-tube.
6. The intubation-tube passes lower down into the trachea.
7. That sufficient air can pass through these tubes is proven by closing the nostrils, holding the intubation-tubes between the lips (closed). It will then be found that sufficient air is obtained for comfortable breathing.

The time for intubation is come when the diagnosis of membranous croup has been made. The earlier it is done the better the result.

Atkinson: Diagnosis of Rötheln from Measles and Scarlatina. (*British Medical Journal*, January 22, 1887.)

In the beginning of the attack rötheln may be confused with scarlatina, but if any doubt exists, forty-eight hours will clear it up, as by this time, if it be a case of German measles, the rash will either be entirely gone or greatly diminished, and the temperature nearly normal.

In rötheln, again, the lymphatics are generally enlarged, but the submaxillary glands rarely. In many cases there is but little general disturbance and there is no redness of the tongue.

Morton: Analogy between Spasmodic Croup and Asthma. (*Lancet*, January 22, 1887.)

Points of resemblance were the sudden nocturnal invasion, daily remissions, tendency of attack to recur on two or three successive nights, greater prevalence of the male sex, the dry early stage and the moist stage, later the liability in both diminishing about the sixth year, the frequent dependence of both upon slight catarrhal attacks, or indigestion, and the occurrence of both in the summer as well as in winter.

Croup was a paroxysmal dyspnœa from disturbed innervation of the larynx, as asthma was of the bronchi.

Dr. Charles West said that children who suffered early in life from croup were subject to asthma later.

Simon: Diarrhœa in Children. (*Jahrb. f. K.* [from *Prog. Méd.*], Bd. xxv. H. 3.)

The author calls that form of diarrhœa which is caused by improper nutriment, and is associated with dyspepsia, diarrhœa *sine materia*, lienteric, or functional diarrhœa. The harmfulness of cow's milk which is boiled after it has been transported a long distance, to which bicarbonate of soda or arrowroot has been added, and which is given to the child in an apparatus too complicated to be kept thoroughly clean, consists in the fact that it coagulates in the stomach, and thus renders peptonization and emulsification impossible. These coagula are insoluble, are very irritating, and excite an excessive secretion of intestinal mucus. Children who are prematurely weaned often receive the most inappropriate and unassimilable nutriment. As early as the fourth or fifth month of life it not infrequently happens that they are given the ordinary food of the mid-day meal, such as soup, bread, wine, or vegetables. Lienteric diarrhœa sometimes occurs in children who are fed from the breast, when there is no apparent chemical change in the quality of the milk or the health of the nurse. It may be due to excessive intestinal secretion on the part of the nurse, to the existence of menstruation, or to excesses of various kinds. Climatic influences also have an important causative bearing, whether the extreme be heat or cold. The author believes that the diarrhœa of dentition is due to reflex vaso-motor hyperæmia of the intestinal mucous membrane. Certain cerebral and spinal lesions may also have a direct influence upon the vaso-motor apparatus of the intestines and thus cause diarrhœa. Those forms which occur during the convalescent period of the exanthemata and pneumonia, and as a consequence of severe burns, are regarded as due to vaso-paralytic conditions of the intestinal vessels. Symptomatic diarrhœas must be differentiated from the lienteric form. The former are the expression of anatomical lesions of the digestive tract, or of certain glands, or of some general disease. Of the first variety, acute and chronic enteritis are the most conspicuous forms. The appearance of blood in the stools in these forms of diarrhœa is a common occurrence among children, and does not necessarily indicate dysentery. With respect to disease in organs which are associated with the intestines, congestion of the liver (in heart-disease and whooping-cough) and amyloid disease of the liver lead most frequently to diarrhœa. Fatty diarrhœa may arise in consequence of disease of the pancreas. In connection with the acute fevers the author distinguishes a mild form of diarrhœa, which is dependent upon superficial catarrhal disease of the intestine, and a severe form which is due to paralysis of the capillaries. The latter constitutes a very grave symptom in measles, scarlet fever, smallpox, and diphtheria. Under the influence of malaria and syphilitic infection we may also have diarrhœa, and in connection with the herpetic, rheumatic, scrofulous, and rachitic diatheses. We can learn from the intestinal evacuations whether the child is suffering from dyspepsia, or from catarrh, or from inflammation of the intestine. In the first of these conditions the evacuations will consist mainly of imperfectly digested nutrient material. There will also be colicky pains, possible swelling of the abdomen, and restlessness at night. In intestinal catarrh the stools will contain remnants of the food, bile, mucus, and streaks of blood; chemically we shall have mucus, bile, fats, salts, and albumen. There may be some colic, fever, a yellow tongue, and great thirst, while the eyes present a depressed appearance. In inflammation of the intestines or entero-colitis the stools are green in color, viscid and acrid. They contain mucus, bile, albumen, and salts, are sometimes scanty, and at others very abundant in quantity. There is constant fever and severe colic; the belly is hot and tense. In choleriform diarrhœa the evacuations are very frequent, colorless, and thin; the belly is flat, and there is usually serous vomiting. The eyes, nails, etc., present a cyanotic appearance. In Asiatic cholera the cramps and cyanosis are exceedingly pronounced. The catarrhal or inflammatory forms of diarrhœa are sometimes associated with cerebral phenomena, which at times take the form of eclamptic attacks, and at others of meningitis. In such cases the differential diagnosis between diarrhœa of a cerebral origin, tuberculous meningitis, and typhoid fever is exceedingly difficult. The bloody stools of catarrhal and inflammatory diarrhœa must not be mistaken for those of dysentery, which is very rare among children. One should not forget also that evacuations of this kind occur in imagination. The diarrhœas of typhoid fever and malarial poisoning, of tuberculosis, of the herpetic and rheumatic diatheses, and of enteritis (*pseudomembranacée*) are also characteristic. The latter follows chronic constipation, and is characterized by discharges of viscid hyaline masses. Great pain accompanies the passage of these masses. No febrile process attends the disease. Intestinal diphtheria is not considered in this series of papers.

A. F. C.

Descroizilles: Infantile Cerebral Hemiplegia. (*L' Union Méd. du Can.*, October, 1886.)

Cerebral paralysis in children is more frequently unilateral than bilateral. In some cases the symptoms come on suddenly, in others after partial or general convulsions. Motility is more apt to be affected than sensibility. The facial muscles are rarely paralyzed to any great degree. The hemiplegia may last for only a short time, or it may be permanent, and associated with atrophy and deformities. Not infrequently in children who become hemiplegic there is an arrest of development of the bones, as well as of the soft parts. Epilepsy is not unusual in the subjects of this disease, but the convulsions do not usually present all the phenomena which are typical with epilepsy. Unless the case is a severe one the intellectual faculty may remain unimpaired, but if severe, it almost always eventuates in idiocy or imbecility. In early childhood cerebral hemiplegia sometimes follows eruptive fever or diphtheria. In cases which are seen after the fourth year of life, however, unilateral paralysis is usually the result of a tumor of the brain, and particularly do we find it dependent upon degeneration of a tuberculous nature. Congenital syphilis, traumatisms, and dentition are also cited as causes. With regard to treatment little encouragement can be given. The faradic current may be of service in some cases, and mercury and iodide of potash may be of service in cases with syphilitic antecedents. Otherwise there is little that can be suggested.

A. F. C.

Siegel: Observations concerning Diphtheria. (*L' Union Méd. du Can.* [from *Jour. de Méd. du Paris*], October, 1886.)

The author advances as his opinion:

1. Diphtheria is still in many respects a disease which is not understood.

2. Diphtheroid angina may be regarded as an affection which is distinct from true diphtheria, at least according to recent researches.

3. Scrofula and other diseases depending upon constitutional troubles, as well as local disorders, like hypertrophy of the tonsils, predispose to diphtheria.

4. The following elements are worthy of attention with reference to the treatment of the disease:

(*a*) Isolation should be insisted upon in every case.

(*b*) As far as possible we should insist upon effective means of prophylaxis.

(*c*) Medical intervention of every kind should be avoided if not absolutely necessary.

(*d*) The means of medication which have been in use up to the present time are ineffective, and are far from giving us absolute security.

(*e*) The use of the essence of turpentine internally has given different results, some good and others uncertain; but they warrant further investigations in this direction. A. F. C.

Queyrat: A Contribution concerning Tuberculosis in Early Childhood. (*Rev. Mens. des M. de L'E.* [from *Paris Thesis,* 1886], October, 1886.)

According to Cadet de Jassecourt the form of pulmonary tuberculosis which always occurs in early life is the bronchopneumonic form; the enormous cavities at the apices, which are so common in adults, being very rare in children under four years of age. The older writers, Papavoine, and Rilliet, and Barthez, assert that tuberculosis itself is uncommon among children under two years of age, and extremely rare among those under one year. The recently-published statistics of Froebelius, Demme, and Biedert appear to support this statement. On the other hand, the author, whose experience is based upon cases observed at the *Hôpital Tenon* in the service of Landouzy, regards tuberculosis in early life as a common affection. Out of three hundred and thirty-nine children who were admitted at that hospital, there were sixty-one deaths. In thirty-five of these cases autopsies were made, and in eleven tuberculosis was found. The percentage in these cases is very much higher than in the statistics of Froebelius, according to which the percentage of tuberculosis was only two and five-tenths. It is possible that the recent researches in bacteriology have caused a certain number of cases to be attributed to tuberculosis, which but for these would have been attributed to broncho-pneumonia. Many cases of generalized miliary tuberculosis in children, which begin in the form of broncho-pneumonia, doubtless depend upon the penetration of the bacilli into the bronchi. In some cases the broncho-pneumonia is not observed, and the disease develops into tuberculosis before any serious condition is suspected. In other cases broncho-pneumonia is diagnosticated, and the child may be cured of that, the tuberculosis still remaining. Death may result from broncho-pneumonia itself, and the first evidence of tuberculosis be obtained by microscopical examination of the lung-tissue. Broncho-pneumonia might be the result of the bacilli tuberculosi, their action being that of a foreign body. A. F. C.

Barlow: Disseminated Myelitis following Measles. (*Brit. Med. Jour.*, November 20, 1886.)

The patient was aged twenty-three, and died on the eleventh day from the onset of the measles.

There was nothing peculiar about the attack of measles. The spinal-cord symptoms were noted first on the fourth day.

Extensive softening of the cord was found in the upper dorsal region, and similar changes in the medulla were found on microscopical examination.

The case is a unique one.

Barlow: Ulcer of the Stomach of Tubercular Origin. (*Lancet*, January 1, 1887.)

The specimen was shown at the London Pathological Society, and was taken from a child twenty-one months old, who died of general tuberculosis. It was located near the cardiac end of the greater curvature. Its edges were undermined, but there was no surrounding thickening.

In one hundred and forty-six cases of tuberculosis in children, Rilliet and Barthez had found the stomach involved in twenty-one cases. In seven there were miliary tubercles.

McBride: Cerebral Lesions following Chronic Ear-Disease. (*Brit. Med. Journal*, March 19, 1887.)

The common ones were abscess, purulent meningitis, and sinus phlebitis. Of forty-two cases, there were fifteen of cerebral abscess, twelve of purulent meningitis, seven of cerebellar abscess, and eight of thrombosis, or sinus phlebitis. His experience had not been confirmatory of the opinion of Hulke, that cerebral abscess was commoner in children and cerebellar in adults.

Cerebellar abscess did, however, more frequently occur with disease of the internal ear than the cerebral. The tuning-fork was valuable as a means of differential diagnosis. If sound-conduction were well preserved in the affected ear the abscess was probably cerebral; if lost, probably cerebellar.

It was doubtful whether cerebral disease ever followed suppuration of the external meatus.

Le Gendre: Diagnosis and Complications of Varicella. (*Le Concours Méd.*, January 22, 1887.)

The author reports in this paper a lecture of Grancher's, from which it appears that there are still obscure points in respect to this disease. Regarding prophylaxis, it is important that one should not confound varicella with varioloid. If the case is one of varicella, isolation is unnecessary, but if varioloid, isolation should be as rigid as for variola, considering the fact that the attenuated virus from a patient with varioloid may be the cause of a grave or even fatal variola. Trousseau bases the differential diagnosis of varioloid and varicella upon the following points: In varicella there is little or no fever, and the eruption occurs simultaneously with or not more than twenty-four hours after the first prodromata. In varioloid there is a fever of invasion lasting three days, the eruption coming on the fourth. Varicella is evolved in successive epochs, the first vesicles being dried up when the second crop appears. The eruption spreads itself indifferently over the trunk, face, and limbs. In varioloid the first papules usually appear upon the face, then upon the limbs and trunk. It may be two days in developing, but there is only one crop. In varicella the eruptive element is a vesicle resting upon a red base, with thin walls and translucent contents, which dry up in two or three days if not discharged. In varioloid there is a papule which develops into a vesico-pustule; it may become umbilicated, and the desiccation of its purulent contents requires eight or nine days. Varicella must also be differentiated from other conditions, however. Among them are *prurigo varicelli forme*, a chronic cutaneous affection, which was described in 1875 by Jonathan Hutchinson. This condition usually begins as true varicella; it has successive crops of vesicles and bullæ which may be separated from each other by quite an interval of time, and may suggest successive attacks of varicella. The eruption is accompanied by intense pruritus. If the largest vesicles are broken, suppuration will follow, and a condition which resembles ecthyma. The seats of election for this eruption are upon the flexor surface of the joints, and the plantar and palmar surfaces of the extremities. Emaciation and death not infrequently are the results with children who have this disease. Another condition for differentiation is afforded by the varicelliform syphilides which have been described by Duhring, and which form a portion of the late secondary developments of syphilis. The diagnosis is facilitated when other characteristic phenomena of the disease are present. The bullæ of pemphigus are usually much larger than the vesicles of varicella, and their conditions of development are different. They have been mistaken, however, for the eruption of varicella. A vesicular, varicelliform eruption may also be the result of medication with preparations of arsenic, bromine, iodine, and even quinine. Grancher disagrees entirely with Hebra and Kaposi, who insist upon the identity of varicella and varioloid. There is no doubt as to the inoculability of varicella. Steiner, of Vienna, has succeeded in reproducing it eight times out of ten inoculations. He found the average period of incubation to be eight days. Prior has reported the coexistence of varicella with scarlatina, and Henoch with rubeola. In some cases, especially in those which are associated with whooping-cough, it may have an hemorrhagic appearance, and in cachectic subjects even a gangrenous character. It is well to know that it is possible for the disease to end fatally,—for example, in cases in which broncho-pneumonia occurs as a complication or a sequel. Acute parenchymatous nephritis is also an occasional complication, manifesting itself between the fifth and the twenty-first days, beginning with hæmaturia, ischuria, albuminuria, revealing epithelial casts in the urine, producing anasarca, and possibly death from pulmonary œdema or uræmia.

Sevastre: Broncho-Pneumonia Secondary to Offensive Diarrhœa. (*Le Concours Méd.*, January 22, 1887.)

The author based his statements upon observations made during an epidemic of broncho-pneumonia at the Hospice des Enfants-Assistés (Paris). Most of the children were about eighteen months of age, and were badly nourished, having suffered particularly from the want of a proper supply of good milk. When brought to the hospital they were suffering from gastro-enteritis, the symptoms being vomiting, and a profuse, offensive diarrhœa. The temperature was usually normal or slightly elevated. At the end of a few days typhoid symptoms supervened with some of them, dryness of the tongue, fuliginosities upon the lips, and later, in all the cases, the broncho-pulmonary disorders took rather the form of very decided foci of congestion than of true centres of pulmonary hepatization. Sibilant and subcrepitant râles, diminution in resonance at certain points, an expiratory murmur of moderate intensity, with cough and dyspnœa, were the indications of pulmonary complication. The temperature became more or less elevated in an irregular manner according to the importance of the lung-disorder. The larger number of the children died, and the autopsies revealed, in addition to splenization, congestion and other lesions of broncho-pneumonia, extensive intestinal lesions, either in the form of congested patches at the summit of groups of lymph-glands, or of very slight ulcerations. The lymphatic glands which were involved were, in most cases, slightly swollen, congested, or ecchymotic. There were no lesions of any consequence in the spleen; the liver was frequently in a state of fatty degeneration, and the kidneys were not, in all cases, perfectly healthy.

The author rejected the hypothesis of typhoid fever for these cases, believing, instead, that the disease originated in enteritis with fermentation of an excessively putrid character, that ptomaines were generated which resulted in auto-intoxication, of which broncho-pulmonary disorders were the outcome. Guided by this interpretation of the pathogenesis of the disease, the treatment which is required should manifestly be of an antiseptic character. Naphthaline alone did not yield good results in the author's hands. Calomel was much more satisfactory, and most of the cures which were obtained were attributable to its use.

Juranville: Oxycrasia of Hereditary Origin. (*Gaz. Méd. de Paris*, November 6, 1886.)

Parrot, in his Clinical Lessons, gave as the etiology of athrepsia (or oxycrasia, as it should be termed with greater exactness) two principal causes. This condition follows acidity of those secretions which in children are normally neutral or feebly alkaline, and the causes to which Parrot refers are improper dietetic arrangements, both as to quality and quantity, and sudden changes in the child's surroundings. Recently a third cause for this condition has been found by Gaube, of Gers, his conclusion being based upon a large number of clinical observations, that cause being heredity. Cases of athrepsic children were seen by him in which improper alimentation could not be held responsible at any period in the children's lives, for the children had been born amid good social surroundings, had been nursed by their mothers, who were in good physical condition, and yet were the subjects of athrepsia in a severe form. In these cases there was an intermittent glycosuria, which must be distinguished from ordinary diabetes in children. By tracing the family history of these children it was found that arthritis, emphysema, gout, and eczema had prevailed in them to a greater or less degree. An illustrative case is detailed, the child being six months old, with the best hygienic and social surroundings, with intermittent oxycrasia, and with a family history of arthritis, calculus, and herpetic disorders. Each attack of oxycrasia yielded promptly to treatment with alkalies.

III.—SURGERY.

W. W. Cheyne: Early Tracheotomy in Diphtheria. (*Brit. Med. Jour.*, March 5, 1887.)

The writer's position as a pathologist entitles his views of the nature of the disease to careful consideration, although all may not agree with his therapeutical inferences.

The disease, he says, is due to a micro-organism, most probably a bacillus. This gains access to and grows on the mucous membrane of the throat, penetrating into the superficial layers and leading to the exudation of fibrinous material, which, with dead epithelial cells, forms the false membrane. As the bacilli grow and spread, the patch extends. Toxic ptomaines are produced, absorbed, and produce constitutional symptoms of infection. Apparently the bacilli do not penetrate into the circulation, so the disease remains from first to last a local one, the general symptoms being due to chemical poisoning.

His inference is that the whole object of treatment should be the destruction of the bacilli *in situ* and the prevention of their spreading, since they are the cause of the false membranous inflammation.

He advocates, therefore, very strongly, the local treatment of the disease by antiseptics.

His plan is first to remove as much as possible of the membrane with forceps, and then apply to the denuded surface a watery solution of the bichloride of mercury (1 to 500) by a brush, very carefully, lest some of the fluid be swallowed. This brushing should be repeated every two hours, care being directed especially to the margin of the disease. In the intervals a gargle of a solution 1 to 2000 is used.

In children not so good results are to be obtained as in adults, for manifest reasons. Here the antiseptic may be combined with glycerin to make its effects more lasting and avoid frequent applications.

Passing now to the subject of tracheotomy, the writer believes that the profession has made a mistake in making mechanical obstruction in the larynx the sole indication for the operation. He argues that it should be done *in every case as soon as it is certain that the larynx has become affected, chiefly with the view of preventing the downward spread of the disease,* the object of the operation being to allow systematic and thorough local treatment of the disease in the larynx.

He advocates the high operation; in many cases, laryngo-tracheotomy is to be preferred, in order to gain access to the larynx.

The clinical experience reported with the above plan of treatment is so limited that no conclusions can be drawn from the results obtained. It certainly has something to commend it. [The author does not deserve the credit of first presenting tracheotomy upon these grounds, as Goodhart, in his "Diseases of Children," nearly two years ago, takes similar ground.—REP.]

Pick: Spontaneous Dislocation of both Hips. (*Brit. Med. Jour.*, March 5, 1887.)

The patient was a boy who first suffered from acute necrosis of the tibia, followed by what seemed to have been pyæmic synovitis of both hips, with effusion and softening of the capsular ligaments. The dislocations were attributed to the pressure on the softened capsule by the head of the femur in the position of recumbency.

When admitted the right thigh presented the signs of a forward dislocation, and the left that of dorsal displacement. The neck of the femur was divided on the right side, and the shaft, just below the trochanter, on the left side. This operation resulted in securing a much better position of the limbs, but the boy was still unable to walk without support.

Macan: Congenital Stricture of the Orifice of the Urethra, Hypertrophy of the Bladder, Cystic Degeneration of the Kidneys. (*Brit. Med. Jour.*, March 5, 1887.)

The child was suffering from imperforate anus, and died soon after birth.

The urethra behind the stricture was greatly dilated, the bladder thickened. The right kidney was converted into a cyst, which formed an abdominal tumor, and contained a large amount of urine. The left was also disorganized.

The specimens were taken as clear evidence that the kidneys were very active during intra-uterine life, and that this secretion was the source of the liquor amnii. The child had a spina bifida, which had undergone spontaneous cure, and a deformity of one of its legs.

The conclusions of the writer were not concurred in by the gentlemen who discussed the paper. One looked on the kidney condition as one of cystic degeneration.

Eisenberg: Inoculation of Tuberculosis by Circum-

cision. (*Brit. Med. Jour.* [from *Deutsch. Med. Woch.*], No. 35, 1886.)

One case was reported by the writer, and two referred to previously published by Lindman, and ten by Lehmann.

In every instance suction was performed by a phthisical operator. The usual course of events was, first, some proliferation at the site of the operation, then infiltration of the inguinal glands with breaking down, and later, general tubercular infection. In Eisenberg's case, tubercle bacilli were found in the broken-down inguinal glands.

Dandridge: A Successful Case of Gastrotomy. (*Cincinnati Lancet-Clinic*, November, 1886.)

A child of four was suffering from a stricture of the œsophagus, caused by drinking caustic potash, April 26, 1886. From that time increasing difficulty was experienced in taking food. Four months later an almost complete stricture was found at the depth of six inches. The use of cocaine in the œsophagus gave but temporary relief; and on October 7, the patient having received no food, except by enema, for twelve days, an incision was made parallel to and about three-quarters of an inch from the costal cartilages of the ribs, having its centre opposite that of the ninth. Hemorrhage having been stopped, the peritoneal cavity was opened, and the stomach grasped and pierced by two hare-lip pins to prevent it falling back into the cavity. The peritoneum was then stitched to the integument and the stomach to the abdominal wall with silk and wire sutures, and left until partial adhesion took place. In the mean time, fluid nutriment was administered by means of an aspirator with fine needle. Forty-five hours later the stomach was opened, and a catheter introduced, held in place by a long pin. Six days after the operation, the pins piercing the stomach, most of the stitches were removed, and two days later the rest were taken out. Some fever followed the operation, but gradually disappeared. After remaining a week, the catheter was removed, and introduced only when food was given. The wound became thoroughly cicatrized, and the opening was guarded by a pad of folded muslin. The writer asserts the superiority of this method over all others, both in freedom from danger and in prolonging life, and advises its use in all cases of stricture of œsophagus.

Jones: Ankylosis, Extreme Lateral Curvature of the Cervical and Dorsal Spine with Torticollis, following Acute Rheumatism, successfully treated by Mechanical Means. (*Brit. Med. Journal*, February 5, 1887.)

A boy of eleven years contracted acute rheumatism from exposure, affecting almost every joint in the body. In the sixth week stiffness of the neck and torticollis were noticed, and gradually increased. No attempt was made for two years and a half to overcome the deformity or prevent its increase. At the end of that time he was greatly deformed. The angle of the jaw rested on the sterno-clavicular notch, the face being nearly parallel with the left shoulder. The head could not be raised from this position. The muscles were atrophied. The right pupil was dilated, apparently from pressure on the sympathetic. The respiration was somewhat interfered with. The bodies of the cervical vertebræ behind were much hypertrophied to the left side, giving the appearance of a large enchondroma.

After three months' mechanical treatment by suspension and extension apparatus he was discharged, with very good movement and but slight deformity. The photographs accompanying the history only can give an adequate idea of the original deformity and the improvement in this truly remarkable case.

Ewart and Benham: A Discussion on Empyema and its Treatment by Perflation. (*Brit. Med. Journal,* March 12, 1887.)

A case treated by Drs. Ewart and Benham was reported in a boy who had previously had typhoid, the empyema developing as a sequel of that disease, and being complicated by pulmonary gangrene. An opening was made in the fifth interspace in the axillary line, and a counter-opening in the scapular line in the ninth space. Free discharge of fetid pus took place for four days, but the cavity was not washed out. Perflation was then employed in the following manner: with a hand-bellows air was forced through a strong carbolic acid solution, and then into the anterior opening. It was allowed to escape at the posterior opening. It brought with it a large amount of fetid discharge, shreds of false membrane, and a piece of necrosed lung. From this time the fetor ceased, and both wounds closed in a month.

The advantages claimed for perflation are the following:

1. Early removal from the chest of putrid residues, and, in consequence, shortening of the period of suppuration.
2. Resulting from these the avoidance of permanent atelectasis requiring excision of the rib, etc.
3. Daily dressings free from discomfort and wetting.
4. A drier state of the cavity and a more complete penetration of the disinfectant in all its recesses than by fluid injections.

Dr. G. D. Pollock did not see what advantage perflation possessed over washing out through a free opening. This latter procedure has given excellent results in some long-standing cases in his hands. He was unqualifiedly in favor of early incision.

Dr. Dyce Duckworth thought well of the new operation. His treatment hitherto had been to make a free opening and counter-opening, under antiseptic precautions, but not to wash the cavity.

Mr. R. J. Godlee thought the case would have recovered under almost any good treatment. The membranes and necrosed lung could easily have been removed at once by the finger, provided a small part of a rib had been resected; this was quickly reproduced. Where some suppurating residue was left behind he preferred to blow iodoform into the cavity. There were few cases where washing out was called for.

Mr. W. H. Bennett had used perflation, and found it easy to blow out the contents of the cavity, but a good deal of force was required. In an abscess of the thigh in which the method was used, the sac was ruptured and cellular emphysema produced.

Mr. Howard Marsh thought the insufflation of iodoform likely to prove toxic, and, after some experience with its use, he had abandoned it. He recommended free counter-openings, but not washing out.

Dr. Sansom suggested that it would be better to pass the air used for perflation through cotton-wool or blotting-paper soaked in carbolic acid than through an aqueous solution.

Dr. Ewart, in closing the discussion, said that perflation was especially advised in cases where loose or loosely-attached substances were in the chest keeping up the irritation and suppuration.

By attending to the patient's sensations no danger existed. In five out of seven cases he had operated on the left side without danger. It did not embarrass the heart.

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Original Communications.

CIRCUMCISION FOR THE CURE OF ENURESIS.

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SEVERAL years ago I advocated the removal of the elongated prepuce for the cure of incontinence of urine only under certain conditions in a small class of patients. Further observation has led me to modify the views then held and thus broaden the scope of the operation.

If after the eighteenth month the urine is passed involuntarily, I attribute the disgusting act to a pathological state rather than to carelessness. Instead of accepting the popular impression that frequently laziness is the prime etiological factor in enuresis, I have invariably found that by close observation a specific pathological state could be found which yielded promptly to treatment.

Many a boy has been repeatedly and unmercifully punished for wetting his clothes or bed in the face of repeated protestations that he could not help it. The disease and punishment go on together until the patient becomes such an object of disgust to himself and his family that they are impelled to seek professional advice. Then the parents are surprised to learn that they have been chastising their child, perhaps for years, for a fault which was the result of disease and, therefore, incontrollable.

Again there are others who, while they believe the act involuntary, will let it run on for years with the hope that education and the inculcation of habits of cleanliness will effect a cure, or with the belief that their only hope for relief is in the establishment of puberty.

But in too many cases the act continues untreated, in spite of punishments and the jeers of companions, until well-marked .psychical changes take place. The boy, bright and cheerful by nature, soon loses his vivacity, shrinks from the presence of his companions, becomes morose and spiteful, pale and haggard, restless and nervous; will not look you in the face; and with chin depressed and upper lids drooping, presents, indeed, a striking likeness of the onanist.

We generally find the disease divided into three varieties. In the first class the subject suffers from a constant dribbling of urine day and night. This variety is infrequent, and when found it is usually associated with some serious pathological lesion, and consequently does not fall within the scope of this paper.

A second class comprises those whose enuresis is intermittent in character, and occurs in the day as well as at night. We find that in this class the urine is retained for a short time during the day, when the desire to void urine comes, but before the child reaches a convenient place the sphincter is overcome and the poor child is powerless to stop the flow.

But the third class is the one that interests us most because of its frequency, its nocturnal character, its possible concealment for years, and the promptness with which it yields to treatment. It is the children of this class who are so frequently punished for bed-wetting, when they are as powerless to control the sphincter during the night as those of the two preceding classes during the day. They may, and usually do, urinate before retiring, and yet about midnight, during a profound sleep, the urine is passed again, or it may be that the night is passed without the accident, but just before rising in the morning the contents of a full bladder are involuntarily set free. Patients of this class generally dream of urinating, and it takes place during erection of the penis. Again, we meet with cases where the cause is obscure, but, nevertheless, the nocturnal enuresis occasionally takes place. In these patients I attribute the accident to causes that favor a perfectly physiological process in the adult. We well know that late suppers, rich food, wines, certain positions during repose, profound sleep, amorous or lascivious dreams, and many such causes produce a nocturnal pollution in the adult, and I am convinced that these same causes excite a similar irritation in the child; but instead of the seminal discharge, the physiological process of which is not yet established, the bladder is emptied. In each instance the discharge is the result of a conservative process of nature to relieve the irritation. Indeed, this theory seems the more plausible because in many instances the nocturnal bed-wetting goes on undisturbed until the full establishment of the sexual functions, when the enuresis is superseded by nocturnal pollutions.

I believe I can safely add another class, although it may be claimed that, as there is no actual incontinence, it should be properly classified as vesical hyperæsthesia. If, however, it is admitted that in a perfectly healthy child of his age the urine should be retained three or four hours, then an incontrollable desire to pass water at shorter intervals being shown, it would seem to approximate incontinence. Clinical observation will justify me in such a classification, because when the desire to urinate comes it is imperative, and unless the child hurries to a convenient place, he loses control over the sphincter and will soil his clothes. This position is further strengthened by the fact that the treatment applicable to this form is similar to that in the others, and is equally as successful.

Formerly I did not advocate circumcision in all cases of elongated prepuce because I believed that if the adhesions were broken up, thus rendering the prepuce capable of retraction, the enuresis would be cured. Further clinical experience has demonstrated that there are a great number of cases that will not be cured as long as the redundant prepuce remains. In a large majority of cases where the prepuce is adherent to the glans, the destruction of the adhesions will afford only temporary relief. In some cases after an assiduous trial of the numerous remedial measures, with the single exception of circumcision, treatment is abandoned with the hope that the physiological changes of puberty will correct the malady. In such cases early circumcision would have accomplished the desired result.

In those cases in which the enuresis is attributed to phimosis, there certainly should be no question about the surgical procedure. It is, however, in those where the prepuce can be easily retracted, or where it is free after the rupture of the adhesions, that there seems to be any question about the advisability of the operation. Consequently, it is with these two latter classes that this paper is intended to deal.

In children under eight years there does not seem to be any hesitancy about operating, but after this age there is a tendency in the profession to delay operative measures until the child's health is impaired and the patience of its friends exhausted.

The clinical picture of the cases to which I refer is a familiar one. The previous history of good general health will exclude any organic disease as the etiological factor. The child, which is now approaching puberty, has been the subject of enuresis from early childhood. It may be diurnal, nocturnal, or hyperæsthetic in form, or these may have alternated at different times. The treatment has been prolonged and rigid. At first the diet was restricted; then liquids were withheld late in the evening, the child many times being sent to bed with burning thirst; he has been awakened several times at night to void urine; masturbation has been suspected but not proved; nauseating vermifuges have been administered without effect; laziness has been suggested and the lash applied; the penis has been constricted with a string and balanitis has been the result; the patient has passed the gauntlet of polypharmacy; and, finally, some devotee of *adherent prepuce* hopes for a cure by breaking up the adhesions and removing the smegma from behind the glans penis. The child was not benefited, and all treatment was abandoned. He is now brought to you with impaired health and strength; he is small for his age; his intellect is weak; he is morose and fretful; he avoids his playmates; and he not only wets his bed but also has a urinous odor about him. On examination you find the prepuce projecting from one-fourth to one-half inch beyond the meatus; the opening is small and its margin is irritated; and on retracting it you find an ichorous foul-smelling collection behind the corona. The glans is irritated and inflamed.

It may be asked how this condition will act as an exciting cause of either of the forms of enuresis. In order to answer this question intelligibly it will be necessary to study the nerve-supply of the penis and bladder.

The nerve-supply of the penis is derived from the pudic nerve, giving branches to the musculi-bulbo and ischio-cavernosa and then passing to the glans, where it breaks up into sensory filaments. A portion of these final branches possess a special kind of end-bulb, discovered by Krause, and called genital corpuscles. It also receives branches from the hypogastric plexus.

The upper part of the bladder receives its nerve-supply from the hypogastric plexus of the sympathetic, and the base and neck are supplied by branches from the fourth sacral nerve.

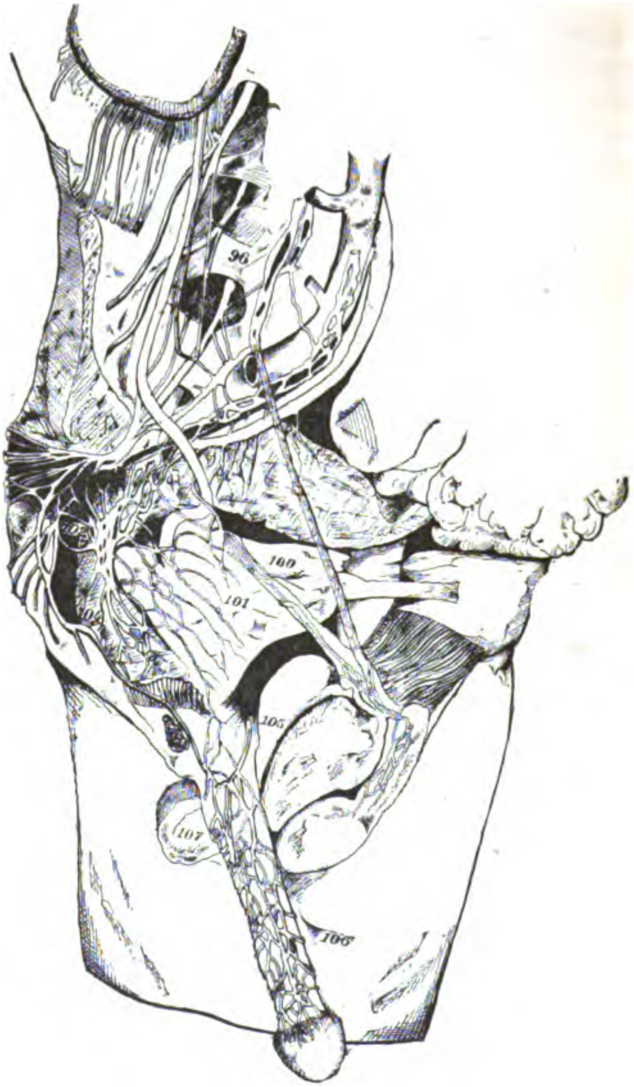
The connection between the sympathetic and spinal nerves is well shown in the cut (Fig. 1), taken from Rüdinger's Anatomy and an ink drawing by Dr. Wm. T. Gill, of the Children's Hospital, District of Columbia.

The communicating branches (96) between the lumbar nerves and the lumbar portion of the sympathetic, the inferior hypogastric plexus (97), which is a direct continuation of the superior hypogastric plexus, and the vesical plexus (101), which is derived from the inferior hypogastric plexus, demonstrate the intimate relation of the sympathetic nerve-supply of the bladder with the lumbar nerves.

The dorsal nerve of the penis (105) joins that of the opposite side and communicates with the sympathetic (of the cavernous plexus) on the back of the penis by fine branches (106). The strong, thick, winding branches (107) are the endings of the spinal dorsal nerve of the penis, which joins the sympathetic branches by numerous communications.

Hence it will appear that if there be such an intimate relation between the spinal and sympathetic nerve-filaments of the penis and bladder, then an irritation of the former should affect the latter according to the laws of irradiation and reflex action.

FIG. 1.

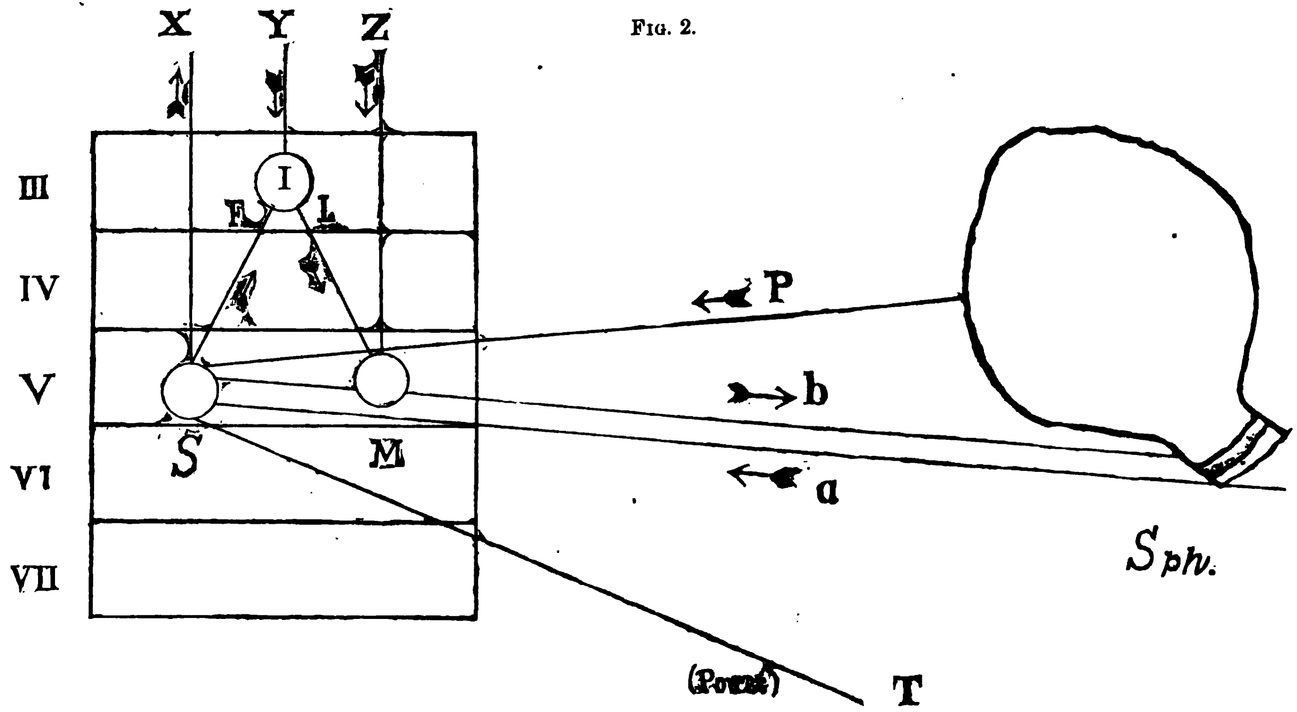


When there is only a small quantity of urine in the bladder the elasticity of the urethra, prostate, and sphincter prevents its escape. If the bladder is greatly distended its sensory nerves are stimulated, and the sphincter is dilated so that a few drops of urine escape into the urethra. There is not only the subjective feeling of a full bladder but also a reflex contraction of its walls; but at the same time there is a contraction of the sphincter and urethra which prevents the passage of these drops of urine. As long as the pressure within the bladder is not very high the reflex activity of the sphincter overcomes that of the bladder, as in sleep; but with rise of pressure and increased distention the muscular contraction of the bladder overpowers the controlling action of the sphincter, and the urine is voided as occurs normally in young children.

The nerves exerting the controlling influence over the retention and evacuation of the urine are: 1. The motor nerves of the sphincter urethræ, derived from the anterior roots of the third and fourth sacral nerves. 2. The sensory nerves of the urethra, from the posterior roots of the third, fourth, and fifth sacral nerves. 3. Fibres passing from the brain to the motor fibres of the sphincter urethræ. 4. Inhibitory fibres exerting a modifying influence over the reflexes of the sphincter urethræ, pass downward through the cord to where the third, fourth, and fifth sacral nerves leave it. 5. Sensory nerves pass from the urethra and bladder to the brain, but their course is not known. Some of the sensory and motor fibres lie in the sympathetic.

The centre for the reflex stimulation of the walls of the bladder is situated, in the spinal cord of the dog, opposite the fourth lumbar vertebra, and is higher than that for the sphincter. Physiological experiments have shown that irritation of the lumbar portion of the cord will cause contraction of the bladder, and that division will produce paralysis. Also that irritation of either the sympathetic or spinal nerve-filaments going to the hypogastric plexus will produce contraction of the bladder, more powerful in the latter than in the former. The most energetic stimulus to the muscular contraction of the bladder comes from the spinal cord through the sacral nerves.

FIG. 2.



NERVOUS MECHANISM OF THE BLADDER (Power).—*a*, afferent nerve of sphincters ; S and M, sensory and motor centres ; X, sensory fibres to brain ; Z, motor fibres from brain ; Y, inhibitory fibres ; I, inhibitory centre.

Power * thus describes the probable mechanism of urination:

"In the first place, looking at the ordinary sensations that are experienced as the bladder fills, we may conclude that sensory impressions, rising gradually in intensity, are conveyed (through P) to the sensory ganglia (S), from whence they are reflected (through *b*) to the motor centre (M), and from thence to the sphincter, causing this to contract more firmly.

"If the bladder becomes greatly distended the impression is no longer wholly reflected, but passes onward and upward to the brain (through S and along X), and excites conscious uneasiness or pain. If it be desired to retain the water, an impulse is transmitted by motor fibres (through Z) to the motor ganglion, M, and the *excito-motor influence* (*of S*) *on the sphincter is intensified by the will.*

"But suppose that instead of holding the water it be desired to discharge it, what happens? The phenomena that are then presented seem to necessitate the admission of an inhibitory, restraining, or regulating centre, which must be in close proximity with the excito-motor centre, and, therefore, at the lower part of the spinal cord, for the action of the will in this matter is not, like its own voluntary muscles, rapid and instantaneous, but is exerted only after the lapse of a distinct interval, and the result is a relaxation of the sphincter.

"We may conceive this impulse to pass down special fibres, Y, to an inhibitory centre I, which may either act directly (through L) on the motor centre, M, or possibly may send branches directly to the sphincter muscles."

Landois showed that contraction of the bladder is not excited directly by a voluntary impulse but by reflex action. If we try to urinate when there is only a small quantity of urine in the bladder, we first stimulate the sensory nerves in the vesical end of the urethra, either by causing contractions of the sphincter or by means of slight abdominal pressure, and thus force a little urine through the urethral orifice. Its presence causes a sensory excitation and a reflex contraction of the vesical walls. At the same time this condition is maintained voluntarily by the action of the intra-cranial reflex inhibitory centre of the sphincter.

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* Landois' Physiology, 474.

It will, therefore, seem probable that these mechanisms within the body, which we call inhibitory centres, exercise control over the reflexes. Thus in the adult the inhibition of the reflexes may be voluntary, as keeping the eyes open when the eyeball is touched. But this suppression is only possible to a certain extent, for if the bladder is greatly distended the stimulus to void urine is very strong and frequently repeated, so that the reflex impulse overcomes the voluntary effort and the urine is spasmodically discharged. So in the child the urine is retained for a time, but when the reflex impulse is of sufficient force to overcome the resistance, whether voluntary or involuntary inhibition, it escapes from the bladder.

Thus it seems reasonable that any irritation of the terminal filaments of the pudic and hypogastric distributed on and around the glans being of sufficient intensity to overcome their ganglionic termini will also expend its force on the centre of urination, and the bladder will also respond to the stimulus.

In the adult the utmost vigilance is required to prevent troublesome inflammation of the glans. When the prepuce covers the organ it becomes very sensitive. The natural secretions of the glans soon become offensive and irritating unless extra precautions are taken to secure cleanliness. In some the secretions become acrid if left pent up for twenty-four hours. The accumulation soon sets up a vesicular inflammation of the corona and adjacent mucous membrane, which is characterized by intense itching, burning, foul odor, painful erections, and frequent micturition. This condition is rarely seen in those who have the glans penis uncovered. If such a condition so frequently occur in those who take precautionary measures to prevent it, what must be expected of the child that even by the strictest supervision will not regard the hygiene of person? Upon retracting the boy's prepuce you see an offensive accumulation covering an irritated or inflamed area.

My belief is that this peripheral stimulus not only affects the ganglion of the pudic, but being of sufficient intensity it also excites the centre and nerves of urination. If it were otherwise, how can we account for the speedy cure of enuresis by circumcision?

The object of this paper is not to deal with clinical histories, so it would be tiresome to detail the many cases operated upon in private and hospital practice. In only one instance have I known the enuresis to continue after circumcision. The boy, eleven years old, retained his urine all right for several days, when the enuresis returned, but not as bad as before. As I had treated him for gonorrhœa—as well as a sister of nine years, whom he had infected—six months before operating, and knowing him to be incorrigible and untidy, I rather incline to the opinion of his parents that he now wets his bed from force of habit and laziness. It may be due to stricture, but if he hears that I am in his neighborhood he runs away, so it has been impossible to exclude this cause.

The prejudice which formerly existed among the laity against circumcision seems to be rapidly passing away, and now when we can offer a reasonable hope that the operation will cure the disease there is an eagerness on the part of the parent, and, many times, the child, to have it done.

One objection to the operation is that the glans will be left uncovered, and that it destroys to some extent the sensitiveness of the organ. If this were true it would in many cases prove a great blessing, but, unfortunately, it is not true. Another objection is that the beauty of the organ is destroyed, whereas, in fact, if the circumcision is neatly done, the penis presents a far better appearance than it does with a redundant foreskin.

From the foregoing it will be evident that I am in favor of operating early if the prepuce covers the glans, whether retractable or not, and not regarding the operation as a *dernier ressort.*

1525 I STREET.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,

AND

WILLIAM A. EDWARDS, M.D.

(Continued from March Number.)

ACUTE AND CHRONIC PERICARDITIS.

PERICARDITIS is an inflammation of the pericardium, or serous covering of the heart. As before noted, this covering is composed of two layers, the visceral and the parietal; either of the layers or both may be inflamed; as a rule it becomes general and extends over the greater part of the pericardium. It is usually, in fact almost always, the result of an inflammatory process more or less well defined, and generally associated with other lesions either of the myocardium or of the endocardium that are inflammatory in character, especially those that are dependent upon some morbid condition of the circulating medium. Hughes is of the opinion that the disease is more common in the infant than in the adult, and considers it a general rule that the younger the child the more chance there is for this affection to occur.

Etiology.—That pericarditis in the young is frequently unrecognized is attested by the fact that the post-mortem often reveals the disease of characteristic type in cases where the practitioner had not considered it existing at all.

Rheumatism is beyond doubt the principal causative agent in producing the disease; pericarditis is not rare in the newborn.

McLoud had one-half of his cases of rheumatism attacked by pericarditis; of those under fifteen years of age a little more than one-third presented pericardial complications. Out of forty-one cases of rheumatism in the young, twenty-three had pericarditis.

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West considers idiopathic pericarditis a possibility, arising independently of any antecedent disease or of affections of the lungs or pleuræ, and cites the case of a child of eleven years who had no previous disease, but who presented well-marked pericarditis. That primary idiopathic pericarditis ever occurs seems hardly reconcilable with our present knowledge of pathology; traumata or constitutional dyscrasiæ, as gout, rheumatism, or syphilis, are sometimes extremely difficult of detection in their incipiency, and possibly many cases of so-called idiopathic origin may be traced to one or other of these causes. Blache also doubts its existence as a primary disease; it is generally seen in association with other diseases or with endocarditis.

Continuity and contiguity of structure becomes an important producing agent, consequently we frequently see it associate with or complicating pulmonary diseases, or left-sided pleurisy. It seems probable that we often have a sort of selective affinity for this serous membrane in certain forms of constitutional disease; for example, the pericarditis arising in the course of typhoid fever, rheumatism, or scarlatina. In rheumatism the occurrence of pericarditis is by no means in accordance with the severity of the type, nor can the fact that it will arise in any given case be determined by the condition of the other serous membranes. Virchow and Bamberger say that in children pericarditis is peculiarly prone to be coincident with pneumonia. All of the eruptive or exanthematous fevers do not tend equally towards the pericardial membrane; this tendency is less in variola than in measles, less in measles than in scarlatina. Frank has recorded cases of measles attended by pericarditis, and Kirby reports the case of a child aged two with fatal pericarditis following varicella; Stokes a case aged five years of acute dry pericarditis which followed an undetermined eruption. To Robert Mayne* is due the credit of first calling attention to the fact that scarlatina is the one eruptive fever in which we note the greatest number of cases of pericarditis: he records an example of the disease in a child aged twelve years. Scott Allison† has noted three cases following scarlatina. The memoir of Thore (*Arch. Gén. de Méd.*, 1856) relates a case of hydropericarditis following scarlatina. This known tendency of the poison of scarlatina to localize itself upon the serous membranes is to-day well recognized. The pericardium is most apt to become involved during the second or third week after the appearance of the disease; at this time an effusion may be rapidly poured out into the pericardium, the lungs at the same time becoming œdematous. The general constitutional condition during an attack of scarlatina seems to directly predispose to inflammation of the peri- and endocardium; the condition of the kidneys during the latter part of a case of scarlatina, and the consequent saturation of the blood with morbific products, may have some causative relation to the pericarditis which is only too apt to arise at this time. In certain cases of albuminuria in children without any history of kidney-trouble, pericarditis has been observed to arise; it has also arisen as a sequela of chronic infantile diarrhœa. Whether it here bears any relation to the antecedent bowel-trouble, or its origin is simply a coincidence, we are unable to say. The association of pericarditis with pyæmia has been well shown by Kirkes, who, in the *London Medical Times*, 1862, reports three cases of the disease coincident with pyæmia; these cases, where pyæmia and purulent deposits are noted in connection with pericarditis, are probably due to extension from the myocardium.

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* Dublin Jour. Med. Sc., No. xx., 1835. † Lond. Med. Gaz., 1845.

In the adult, pericarditis is apt to follow or accompany meningitis; so it becomes of interest to inquire whether the same association of diseases exists in the child, this being a period of life during which meningitis is a not uncommon affection, but unfortunately clinical evidence is as yet not entirely satisfactory upon this point. Stanley, Burrows, and Latham have, however, noted in the child the association of acute cerebral affections and inflammation of the pericardium; it is a question whether the cerebral disease was not due entirely to the pericarditis, and not *vice versa.*

Perichondritis, or necrosis of the ribs in the pericardial region, may give rise to a pericarditis; Kirkensteiner has met such a condition in a child aged three years. The deposition of tubercles in the pericardium may give rise to an acute affection of that membrane. Rillet and Barthez, in three hundred and twelve instances of death by tuberculosis in children, observed ten cases of the deposition of tubercles in the pericardium with acute inflammation of the sac.

The visceral layer of the pericardium is most apt to be affected. A case reported by Liton, *Bull. Soc. Anat.*, 26, 221, showed the tubercles deposited on the anterior ventricular wall, of the size of a bean.

Age.—Sibson's experience shows that out of three hundred and twenty-six cases of rheumatism, sixty-three had pericarditis, and twenty-five of these were from sixteen to twenty years of age. All the fatal cases were under twenty years of age.

Post-mortem appearances; morbid anatomy.—The appearances in childhood are much the same as in the adult, except that this is the age at which we meet a great tendency to effusion with extreme rapidity in the formation of an exudate; the exudate is also liable to be plastic. Pericarditis presents another difference in childhood: the adult may present a dry pericarditis, this in a child is not at all frequent. A slight bloody tinge to the fluid is not at all uncommon in the early years of life.

The amount of liquid that the pericardium may contain is very variable. One hundred or one hundred and twenty-five grammes have been noted; it may contain as much as two hundred grammes.

The physical and chemical characteristics of the fluid are very similar to those in the adult; in the child as in the adult, it may be pus and constitute purulent pericarditis.

The pseudo- or false membrane may be disseminated over the entire sac, or may be located only over a very limited portion of one or the other surface; the membrane does not seem to be so apt to deposit on the visceral pericardium.

This false membrane may cause adhesion between the two layers by bridges or bands, or may totally obliterate the cavity of the pericardium. In some cases milk-like patches may be noted of about the size of a ten-cent piece scattered here and there over the visceral pericardium; organization may have taken place in these patches to an advanced degree, presenting blood-vessels with distinct walls; these patches constitute the "plaque laiteuse" of the French writers, who have remarked that these plaques are apt to occur in cases of secondary pericarditis following wounds or septic absorption. Jenner has, however, attributed the origin of these milk-like deposits to the impingement of the heart against the thorax, considering that to attrition they owe their origin. We have noted these in rachitic children with depressed thorax, and can but conclude that constitutional vice does seem to have a great deal to do with their arising in any particular case.

We occasionally on the post-mortem table meet with cases of *hemorrhagic pericarditis* in the young. Bamberger and Lacrozille have particularly dwelt upon this condition; these observers conclude that the pathology is similar to hæmatoma of the dura mater, and as neoplastic formations are frequent in children, we find that a tendency to this form of the disease is well marked during childhood. The false membrane will be found of extreme delicacy, in which the vessels have very thin and delicate walls and are easily ruptured; the effusion, however, seems to depend as much upon a bloody exudation as it does upon direct rupture of the vessels; this pericardial condition has an analogue in hemorrhagic pleurisy.

Dr. Four records a case in a child aged fourteen, the symptoms simulating closely those of typhoid fever.

In these cases the evidence of a grave blood-disease will usually be found at the post-mortem examination. Kibber observed hemorrhagic pericarditis in a child aged four, who died of diphtheria. Eight to ten disseminated hemorrhages were seen on the visceral and parietal pericardium. They were made up entirely of infiltrated blood, which was just beneath the serous tissue.

When examining cases dead of pericarditis, certain *concomitants* may be noted. Most frequently we will see endocarditis associated with the pericardial disease. The cardiac cavities will almost always be found to be dilated. In adults this is probably due to a great extent to mechanical causes, as adhesions, but in children the myocardium is more apt to be affected to a greater extent, aiding materially in the early dilatation of the cavities. This is further evidenced by the fact that the myocardium not infrequently presents purulent foci, and that we almost always find pericarditis and myocarditis clinically associated.

Symptoms.—Pericarditis, like endocarditis, may be either acute or chronic, primary or secondary, and the symptoms will be manifested accordingly.

The symptoms of acute pericarditis in the child are peculiarly prone to be masked, latent, and ill defined during the early stages. This latency of the early symptoms is a peculiarity of the disease when occurring in early life. A symptomatic diagnosis in the child is indeed a difficult task. The marked local pain complained of by the adult is not so well defined in children. Beyond doubt the child suffers, but is unable to definitely locate the seat of pain. When treating children suffering from disease the known tendency of which is to present pericardial complications, we must constantly be alert and on the watch for those symptoms which would point towards pericardial involvement, as the disease is only too apt to complicate some already existing morbid action. Especially is this true of pleurisy or pleuro-pneumonia of the left side. The presence of high temperature, disturbance of the circulation, and even pain, may all form but an integral part of the primary disease, of which pericarditis is but a complication. Possibly the physical signs, as presented by inspection, palpation, percussion, and auscultation, will give us some points by which a correct diagnosis can be arrived at during the early stages; but certainly, as soon as sufficient lymph has been exuded to roughen either the visceral or reflected pericardium, or an effusion has formed, with its undoubted characteristic symptoms, the diagnosis at once becomes apparent.

Physical signs; local symptoms.—We may then rely first upon the friction-murmur, and later upon the muffled heart-sounds, which may eventually almost entirely disappear, especially at the apex, the sounds at the base being heard until the fluid completely distends the pericardial sac; the friction-sound or murmur will also linger until this condition pertains. This friction-sound is to and fro,—that is, synchronous with the systole and the diastole, the former causing the inflamed and roughened surfaces to closely approximate, the latter to recede. We must bear in mind that the heart of a child is much nearer the auscultator's ear than that of an adult; forgetting this point, auscultation is apt to be very confusing and misleading in the young. The friction-sound, if it exists, will rapidly become more apparent, as in the child the membrane is formed with great rapidity. In pericarditis the bruit or murmur which is heard over the præcordia may have two sources of origin,—it may be due either to an intercurrent endocarditis or to pericarditis alone and uncomplicated. A pericardial murmur in a child may closely simulate an endocardial bruit.

The special and diagnostic characters of a pericardial friction murmur are as follows:

It is usually basal, or directly over the body of the heart.

The murmur is almost always double, or to and fro.

It is not transmitted into the vessels and circulation, but may be heard in a child over a much larger præcordial area than in the adult. It is but rarely, however, heard over the posterior left thorax.

The murmur, particularly in the young, will be altered by the position of the patient, in being intensified as the subject leans forward, and rendered less audible during full inspiration or in the reclining posture.

The effusion is apt to arise somewhat rapidly, and by inspection we may note a pericardial bulging, which, in children, is marked, and arises early. The ribs being flexible and the thorax small, the bulging becomes the more apparent. A rachitic deformity of the chest must be differentiated from the bulging due to an effusion.

The distention of the pericardium will cause upward displacement of the apex-beat. This is coincident with the formation of the fluid, and is proportionate to its quantity. In cases where any amount of effusion has been poured out, the apex may be displaced one or more interspaces. The cardiac impulse, like that of an adult under similar conditions, will be materially diminished. The symptoms on palpation are about the same in both the child and the adult.

The acuteness of the disease and the rapidity of the effusion will be productive of a series of symptoms, which are in themselves almost diagnostic.

We shall style them the *general symptoms*.

The disease may be ushered in by a chill, fever, and some ill-defined cerebral symptoms, or choreic movements, followed by somnolence or delirium. These, however, may be but the symptoms of the primary disease, and the pericarditis for a time remain unrecognized. The *pulse* at first may be regular, but as the cardiac muscle becomes weaker the circulation becomes irregular and the radial pulsation is feeble and intermittent. This is particularly the case should it arise in the course of acute articular rheumatism or the eruptive fevers. As the disease advances the pulse becomes small, irregular, and intermittent; respiration is embarrassed, or mild dyspnœa may arise. If the case pursues a downward course the dyspnœa becomes apnœa, and asphyxia is marked, with grave cerebral symptoms, or an intercurrent cerebral affection may complicate the case; for instance, rheumatism may conjointly attack the pericardium and the cerebral meninges. From the fact that pericarditis is nearly always secondary, it is apt to pursue a slow and tardy course, if the case is to terminate favorably. The disease, as a rule, becomes in children an illustration of chronic pericarditis, associated with organic cardiac disease in later life. If the disease primarily originated in a rheumatic subject, we are apt to have recurrent pericarditis.

Chronic pericarditis may exist, and present to the diagnostician few, if any, reliable signs, and no pathognomonic signs whatever. From the fact that chronic pericardial adhesions produce dilatation of the cardiac cavities, we most usually note diffusion of the apex-beat. The adhesions, furthermore, have a tendency to drag the heart towards the epigastric region. Consequently the apex-beat may be noted to have been displaced in that direction. Chronic pericarditis in the child does not often present præcordial retraction, nor are the cardiac sounds diminished as much as in the adult.

Reduplication of the cardiac sounds coincident with pericardial adhesions has been observed by Rauneau in a child aged six years and six months. The autopsy showed complete dense pericardial adhesions, with a calcareous plate. The child had no symptoms of rheumatism at all. Friedrich has attributed to reduplication of the cardiac sounds a pathognomonic significance in pericardial adhesions.

The so-called ossification of the pericardium, which is really a calcareous degeneration, is of extreme rarity in childhood.

Dr. Bosissio, of Milan, states that pressure by the auscultator's head or stethoscope will increase sounds that exist in the pericardium due to adhesions; this is the more marked the younger the child. We have never as yet been able to convince ourselves of the accuracy of this observation. In those cases which it has been our good fortune to meet, pressure seemed to have but little, if any, appreciable effect in intensifying the sounds. Tumors of the heart are so rare in early life that it is sufficient for us to simply state that they have been recorded, and may confuse the diagnostician to differentiate between these neoplastic growths and chronic pericarditis.

Prognosis of pericarditis.—Usually in children the acute form tends toward recovery. At all events, death is not liable to occur directly from the disease itself, as we so often find at the autopsy of children the presence of pericardial disease that had existed during life, with but few, if any, symptoms.

PERICARDITIS IN THE FŒTUS AND NEW-BORN BABE.

Billard has gone so far as to say that at this age pericarditis was most frequently met with. Later investigations have, however, shown that this is not the case. To Billard, at all events, is due the credit of first calling attention to the disease at this period.

We have noted in a child dying thirty-six hours after birth well-marked adhesions of the pericardial surfaces.

Tardieu, in making medico-legal investigations, has remarked its presence in the fœtus and the new-born. The pathological changes in the affection are about the same as in the adult, but its etiology is more than difficult to decide. It has been recorded as being intercurrent with puerperal disease of the mother. Its association with early vaccination is also not unrecognized.

Webber states that pyæmic pericarditis may follow inflammation of the umbilical cord. This author also remarks that in children who die a few days after birth chronic pericarditis is more commonly observed than is the acute variety, and that they also frequently have a concomitant pleurisy.

Kirkenstein recognizes two forms of pericarditis in the new-born, circumscribed as the plaque laiteuse, and general or diffuse inflammation of the entire pericardium. At birth the pericardium may contain from eight to twenty grammes of fluid exudate. The quantity, however, varies, as does its character. All grades are noted, from clear serum to a purulent accumulation; it is rarely seen to be hemorrhagic.

Blache is of the opinion that at birth the effusion is peculiarly prone to purulent change, and that if the effusion is non-fibrinous yellowish serum, it always dates from uterine life, and is due to disease of the mother.

Occasionally the pericardium may show petechial spots or sero-sanguinolent clots.

When the liquid is a yellow-colored effusion it is apt to be large in amount, constituting hydrops pericardii.

Symptoms.—The physical signs by which we recognize the disease at a later period of life cannot be clinically recognized in young infants; in the new-born we cannot appreciate the presence of the disease at all.

In some cases a tumultuous heart's action, with great acceleration of the pulse, may be noted. Dyspnœa is apt to be a prominent and well-marked symptom. The features are said by some to present a peculiar pinched appearance. The interference with the circulation is further made evident by the condition of the fontanelles, which are somewhat distended and pulsate synchronously with cardiac systole.

Prognosis.—Owing to the difficulty in recognizing the disease at birth, it is almost impossible to give an accurate prognosis.

The course of the disease is, however, apt to be rapid, and generally tending towards a fatal termination. In Bednar's case of an infant aged three weeks, the disease lasted from four to eleven days.

The following case of pericarditis occurred in our practice:

Mary E., aged two and one-half years, was a fairly healthy child until eight weeks before death, when she contracted a left-sided pleurisy, followed by a serous effusion, which eventually became purulent. When it was aspirated a few ounces of illsmelling pus were removed, and the child improved for a short time, when symptoms indicative of the reformation of purulent matter demanded better drainage, which was secured by an incision and the introduction of a tube.

The liver and spleen were enlarged. A diarrhœa set in, which was totally uncontrollable, to which the child succumbed six weeks after we first saw her.

Post-mortem.—Examination was made a few hours after death, and as we report the case solely for the condition of the pericardium, suffice it to say that the left pleural cavity contained several ounces of pus, and presented the usual appearances in such cases.

Heart and pericardium.—The former much enlarged, and the latter adherent to the adjacent structures. The parietal pericardium was much thickened and covered by a pyogenic membrane; the visceral layer was thickened and covered by pus; the layers were adherent over left ventricle.

The following case, recorded by Broxholm,* is of extreme interest on account of the fact that the child complained of no pain, and, although effusion was present in marked degree, did not present either dyspnœa or orthopnœa. The child, a boy aged five, expired suddenly before medical aid could reach him. He had, however, enjoyed seemingly good health.

Sectio cadaveris twenty-four hours after death.

Child was rickety.

Meninges were vascular and congested, no effusion; brain was very vascular. No ventricular effusion, none at base of brain. The lungs were adherent by lymph-deposits, some old, some recent. Tubercles infiltrated throughout lungs.

Pericardium.—Much distended, contained one pint of straw-colored effusion, with numerous flakes of greenish-colored lymph; the interior of pericardium, all over its surface, presented deposits of fibro-plastic matter, rendering its surface exceedingly rough and granular. Heart-muscle hypertrophied, and presented over the centre of the ventricles two patches of a light-brown color, feeling very firm and hard, thinner than the surrounding tissue, and cutting like cartilage.

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* Lancet, London, vol. i., 1856, p. 348.

One segment of the mitral valve was calcified, and in the chordæ tendinæ attached to the same segment, a little removed from their point of attachment, were also noted calcareous degenerations. The tricuspid valve was much thickened, having fibrinous deposits on its edges.

Cavities all dilated and filled with coagulated blood. The stomach, liver, spleen, and other organs appeared healthy, but the mesentric glands were enlarged.

The child had never had rheumatism, as far as could be determined by the history and the post-mortem appearance.

Kirby's case,* before referred to, well illustrates the disease as intercurrent in the eruptive fevers. A previously healthy boy, aged one year and eleven months, had been ill for five or six days with varicella; child developed cough, high temperature, and œdema of leg; sank lower and lower, lying on his back in his mother's lap, countenance pale, pupils dilated, and surface cold, pulseless at wrist; respiration labored; over præcordial region increased dulness; normal sounds of heart scarcely audible, but a friction-sound, although faint, was distinctly heard; child died.

Post-mortem.—Pericardium very vascular and much distended by fluid; the sac was nearly full of yellow flaky serum, and its serous lining, throughout its whole extent, was coated with rough villous-looking lymph. In the pleura, also on both sides of the thorax, where it covers the upper portion of the diaphragm, there were patches of coagulable lymph.

To illustrate the pyæmic form of pericarditis we will select the case recorded by W. S. Kirkes.† A boy, aged sixteen, referred to on page 206 of this article, was admitted to St. Bartholomew's Hospital, having received a violent kick on the shin, about an inch below the knee. Four days after receipt of injury the boy applied for admittance to hospital; there was then a red tense swelling over the injured part, the child presenting a peculiar haggard, anxious look. Auscultation revealed a well-marked pericardial friction-sound; the patient complained of general pains in the limbs, and of feeling very ill. There was, however, no swelling, redness, or particular tenderness of any joint; no symptoms of rheumatism whatever. The skin was hot, the pulse about 120, and the tongue coated with a yellowish fur. On the day after admission a few small pustules were detected on the front of the chest and abdomen. The swelling over the left shin was incised, and much puriform matter evacuated, and the patient was supported with bark, wine, and good nourishment. The nervous agitation increased, the symptoms became more typhoid, signs of copious pericardial effusion ensued, and the boy died exhausted three days after admission, seven days from the receipt of the injury.

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* Lancet, London, 1860, vol. i. p. 87.

† London Med. Times and Gaz., Nov. 1, 1862, p. 461.

On post-mortem examination the pericardial cavity was distended with turbid serum, while flakes and curdy masses of recent lymph were spread over the surface of the membrane, which was intensely vascular. The muscular tissue of heart was softened, especially about the left ventricle; several diffluent, purulent-looking masses,. varying in size from pins' heads to split peas, were scattered through the myocardium, especially at base and in left ventricle. All valves of heart were healthy.

Lungs showed numerous pyæmic deposits. The tibia was much affected and infiltrated with purulent matter.

(To be continued.)

REPORT OF A CASE OF LYMPHO-SARCOMA IN A CHILD, WITH AUTOPSY.

BY ERNEST F. TUCKER, M.D.,

New York.

WHILE an interne at the Boston Children's Hospital, a case occurring in the service of Dr. J. P. Oliver came under my observation which, owing to its peculiar career and rather rare occurrence, I desire to place on record.

Philip W., aged seven, was admitted to the hospital on March 18, 1884. His history was as follows: He had always enjoyed good health until about two years previous to admission, when he had scarlet fever, followed by enlargement of the lymphatic glands in the cervical region. His recovery from the fever was very slow, and considerable time elapsed before the swelling of the glands subsided, or he regained his usual color and strength.

In December, 1883, he had what the family physician supposed was typhoid fever, from which, towards the end of that month, he seemed to recover, but on or about the 1st of January, 1884, he was taken with a chill, and was obliged to return to bed. From that time on his condition varied greatly, improving for a few days at a time, and then again declining. He naturally became very pale and weak, and on several occasions was troubled with a certain amount of diarrhœa. The record of his temperature, which had been kept by his family physician, was rather remarkable. From February 18 to February 24 it varied from 102° to 100°; from February 24 to March 4 it was subnormal, on two occasions dropping down to 96°; then for three days it was normal; for two days, 102°; for three days, 103°; for four days, 102°; for two days, 101°, which brings us up to the date of the child's admission to the hospital.

From a physical examination at that time the following facts were brought out: patient proportionately developed for a boy of his age, complexion light, very anæmic, and somewhat emaciated. In the left supra-clavicular region is a movable lobulated mass of lymphatic glands about the size of an orange; behind the right ear is a similar mass but much smaller.

Percussion of the chest gave rather negative results, except for a somewhat doubtful dulness extending down below the left clavicle. On auscultation moist râles, rather coarse, were heard front and back over both lungs, but especially over the upper lobes.

The liver was considerably enlarged; the spleen was two or three times its usual size. The entire abdomen, over which the cutaneous veins were unusually well mapped out, was distended and markedly tympanitic.

A microscopic examination of the blood gave negative results, and the only thing noticeable about the urine was an excess of amorphous urates in the sediment.

The day after his arrival at the hospital he had a profuse diarrhœa, which was, however, easily checked, and in a day or two his appetite returned, and he began to feel much better. A few days later œdema of the face and lower extremities began, his urine was diminished in quantity, and the papillæ on his tongue were pale and hypertrophied. Diuretics were ordered, and the œdema diminished slightly. On the 31st of March an area of tenderness two inches in diameter was noticed on the right side midway between the lower border of the ribs and the crest of the ilium and about three inches from the spinal column. There was no fluctuation. The abdomen was much distended, the veins prominent, and tympanitic resonance was marked from the ensiform cartilage to a point two inches above the symphysis pubis, from there to the symphysis dulness. Dulness on the sides, changing to tympanitic resonance on change of position. The papillæ on the tongue were somewhat reduced in size and of better color, the scrotum was much distended, and the legs still somewhat œdematous.

During the following week the temperature was about normal; cough was more or less troublesome, but remained loose; the respirations were hurried. Œdema increased; in the scrotum it was extreme, necessitating free punctures several times. Physical examination of the chest revealed nothing new except perhaps that the râles were rather more numerous and of a crackling character. The urine remained unchanged, although diminished in quantity. There was also considerable sweating, and some vomiting. The appetite remained excellent, and the bowels moved regularly. At about this time a peculiar phenomenon was noticed, which could not be explained, and gave rise to much theorizing and conjecture as to what might be its possible cause. Upon passing the hand lightly over the abdomen a sense of crepitation was noticed, as if there were more or less air under the skin.

By the 9th of April the quantity of urine had increased; the œdema had been gradually disappearing, and the glands in the neck were considerably reduced in size; the papillæ on the tongue were of normal size and of a much better color;

the cough was much less troublesome, and the patient was enabled to sleep well without any opiate. He continued improving, but complained of some pain and tenderness in the region of the spleen and below the border of the liver and in various indefinite spots over the abdomen. By the 15th the œdema had entirely disappeared, there was no abdominal tenderness, the urine was normal in quantity, specific gravity 1019. On the 18th a slight return of the œdema and sweating and considerable diarrhœa, but these symptoms again disappeared in a few days. By May 9 the patient seemed to have gained considerable strength, although the diarrhœa was troublesome at intervals. His appetite was good, and he took solid food freely. On several occasions he had been taken out of doors in a long basket, and allowed to remain in the sun for a varying length of time, on one day staying out as long as four hours. On the 14th it was apparent that the patient was getting worse again; his temperature for the past few days had been rising, the night before reaching 105°; he complained of headache, of pain which seemed to be localized about the spleen and transverse colon; his desire to cough was constant; his bowels had to be moved by enemata; his pulse was rapid and jerky. On the 15th he was still worse; he was much weaker; he would eat nothing, but had considerable thirst. On the 18th he began to complain of nausea and intolerance of light; his memory seemed to be somewhat impaired. The abdomen was tense and swollen, and tender to the touch; there was also slight œdema of the scrotum. On the 20th his headache still continued, the pain being of a sharp, shooting character. Two days after this he began once more to improve, gaining a little every day. He was troubled somewhat with painful deglutition during this period, but that passed away, and on June 8 we find him once more feeling very well, bright, and out of doors. Soon after the 20th, however, the temperature began to rise, and the œdema reappeared. The latter part of the month it was decided to remove him to the sea-shore on account of the great heat in the city. Accordingly, on July 1, under my supervision, and attended by an excellent nurse, he was moved there in a special car. He bore the journey well, and all the way was in excellent spirits, and, on his arrival, ate quite a hearty meal, but on the evening of the same day dyspnœa came on suddenly, and, after having passed a most distressful night, he died quietly the following day.

The record of the autopsy, performed by Dr. W. W. Gannett, of Boston, twenty-six hours after death, is as follows: Body of medium size for age, fairly developed, considerably emaciated; rigor mortis present; abdomen distended. Head not opened. Arch of diaphragm, right and left, at the upper border of the fourth rib. Pericardium contained about twenty cubic centimetres of clear fluid, visceral layer thickened and opaque in patches. Heart of usual size for age; left ventricle contracted and empty; right ventricle and auricle moderately distended with fluid blood of a red color and a few pale fibrinous coagula. Aortic valves sufficient; mitral admitted one finger, tricuspid two. The valves, cavities, and muscular substance showed no appearances worthy of special note. Pleural surfaces on the left side free from adhesions, on the right adherent throughout by old and firm adhesions. Both lungs only partially retracted, everywhere pale except in lower portion of right lobe, where there was a dark-red area involving about one-third of the lower lobe; less crepitant than usual; on section, surface moist, yielding, on pressure, abundant aerated serum. The spleen was about three times the size of that of an adult, dark in color, increased in density, capsule thickened and opaque on section, pulp dark in color, tolerably firm; the surface studded with circumscribed gray nodules from one to five millimetres in diameter. Kidneys of usual size and density, rather pale; capsule detached with ease, leaving a smooth surface beneath; on section, ratio of cortex to pyramids as usual; tubular regions fairly distinct; cut surface pale. Bladder not remarkable. Œsophagus, stomach, and intestines showed nothing worthy of note. The liver was about one-third larger than that of an adult, of a red color; density considerably increased; capsule thickened, opaque, and shreddy from fibrous tissue masses. On section, surface of a nearly homogeneous red color, with here and there grayish streaks. The aorta and other great vessels not remarkable. In front of the trachea, extending from the sternal notch to the third rib, was a mass of nodules made up of a grayish, translucent tissue, reaching the size of an orange. The lymph-glands about the roots of the bronchi showed a similar appearance. The periportal glands formed a mass of like size and appearance. The lumbar fossæ on each side were filled with masses of similar nodules, in one of which was found the remains of the right supra-renal capsule. The lumbar glands at the root of the mesentery, together with the glands along the course of the iliac vessels to the inguinal regions, were similarly enlarged. Bone marrow of sternum dark red. Blood everywhere red.

Diagnosis.—Chronic circumscribed pericarditis. Chronic adhesive pleurisy. Œdema and limited atelectasis of lung. Chronic perisplenitis. Lympho-sarcoma of spleen. Diffuse lympho-sarcomatous infiltration of the liver. Chronic perihepatitis. Lympho-sarcoma affecting numerous groups of glands.

In the way of treatment, Fowler's solution and Rabuteau's syrup of the protochloride of iron were the drugs mainly relied upon, others being used to meet symptoms as they occurred.

There is not much in this case that throws light on the etiology of this disease, although it seems to me that the scarlet fever might have been the starting-point. Most of the text-books are silent in regard to its etiology.

The ever-recurring periods of improvement, when the child seemed to be certain to recover, baffled us all greatly in making a diagnosis, although Dr. Oliver did so, and correctly, as shown by the autopsy, a few days before the fatal termination.

157 WEST FORTY-FOURTH STREET.

PEDICULOSIS CAPITIS—AMYLOID DEGENERATION OF THE LIVER AND KIDNEYS AND PROBABLY OF THE SPLEEN.

A Clinical Lecture delivered at the Children's Hospital, Philadelphia,

BY A. V. MEIGS, M.D.,
Physician to the Hospital.

REPORTED BY WILLIAM H. MORRISON, M.D.

GENTLEMEN:—This girl, about ten years of age, is brought to us by her mother, with the statement that there is an eruption upon the head which began when the child was four years old. She states that this eruption under treatment has improved several times, but for the last two years it has been much worse. In other respects the child is perfectly healthy. An examination of the head at once reveals the presence of pediculosis. The hair is filled with lice, the pediculus capitis, and it is covered with nits. The secondary result of this source of irritation is eczema. In such conditions I have never been able to cure the disease without cutting off the hair. Although the lice are readily destroyed, the nits cannot be removed without great difficulty, and unless the hair is cut the parasites will be as numerous as ever in a few days. The only way to accomplish a cure is to cut off the hair, and then in a few days the trouble can be relieved. Pediculosis of the head is much more difficult to cure than the same affection of the body. After the hair is cut off, the head should be thoroughly washed with a solution of corrosive sublimate in alcohol, one grain to the ounce. Although in the irritated condition of the scalp this may cause some stinging, yet it will do no harm to make one application, or possibly two. The case should then be treated as one of ordinary eczema, by the application possibly of oxide of zinc ointment. I am frequently asked if there is not danger from the use of this preparation of mercury. I have never seen the slightest constitutional effect from the use of corrosive sublimate about the head or body in persons suffering from pediculosis. This is also very efficacious in the treatment of pediculosis pubis. Here two or three applications will usually cure the trouble.

Amyloid degeneration of the liver and kidneys and probably of the spleen.—I now wish to show you this little boy, who has been in the hospital since November 22, 1883. He was brought in with coxalgia, and two years ago the head of the femur was resected. Before the operation it was recognized that the liver was much enlarged from amyloid disease. The operation was done notwithstanding this fact, because in this hospital it has been noticed that after the source of the irritation which gives rise to the amyloid degeneration of the liver or kidneys has been removed, the disease may cease to progress, and in some cases even there is reason to believe that the condition has disappeared, but the point whether amyloid disease gets entirely well or not has not been positively determined.

In this case the operation was not followed by improvement in the condition of the liver. It is still large. A large quantity of urine containing albumen and a few hyaline casts and many triple phospates is passed. We have, then, extensive amyloid degeneration of the liver and almost certainly amyloid degeneration of the kidneys. When there is amyloid degeneration of the liver and kidneys, the inference is that the spleen is also involved. When the liver is much enlarged, particularly if the enlargement of the left lobe be marked, it is difficult to determine precisely the size of the spleen. In this case the liver can be distinctly felt through the abdominal walls, and extends as low down as the line joining the two anterior superior spinous processes of the ilium. The notch of the liver can be distinctly felt in the median line in the epigastric region. To the left of this notch there is evidently a body extending down into the abdominal cavity, and the question is whether this is the left lobe of the liver or the spleen. I should take it to be the left lobe of the liver. Percussion over the liver shows that its upper margin is at the upper border of the fifth rib in the nipple line. The normal splenic dulness is said to extend in the mid-axillary line, or just posterior to it, from the ninth to the twelfth ribs. I do not think that this is exactly correct, for the eleventh and twelfth ribs do not come as far anteriorly as the axillary line. The real fact is that the splenic dulness is in adults about one to two inches in depth, beginning at the edge of the costal arch and extending upward in the mid-axillary line. In this boy it would normally not be more than one inch. The dulness in the splenic region begins about five inches above the edge of the costal arch and extends indefinitely into the abdomen. We have every reason therefore to believe that there is a considerable degree of enlargement of the spleen. I do not think that we are able to say with absolute certainty that such enlargement exists, as there is probably fluid in the abdominal cavity. It is also exceedingly likely that where the liver and kidneys are affected the spleen will also be involved. I recall one case, however, where a number of physicians saw the patient and had abundant opportunity to make examination, and every one who saw the case determined it to be one of enlargement of the spleen, projecting beyond the costal border on the left side. The autopsy showed that there was no enlargement of the spleen whatever, but that it was pushed back, and the tumor which was supposed to be the enlarged spleen was a sarcoma of the kidney.

The prognosis is, of course, bad. There is no special treatment for a case of this kind, but the treatment must be guided by the conditions presented. Attention must be paid to the general health. If there is anæmia, tonics are required, and if dropsy comes on, remedies directed to the relief of that condition are indicated.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Sturges: The Temperature of Young Children in Health and Disease. (*Medical Chronicle* [*Westminster Hospital Reports*, vol. ii.], March, 1887.)

Fallacies in diagnosis are likely to result if too much stress is taken upon a single taking of the temperature. Considerable variation exists within the limits of health, and even more from trivial causes. The observations of the writer were made on children under six years, not infants, and were of three classes.

1. Those recovering from some acute disease, observations being carried on during convalescence.
2. Children in a convalescent home but apparently well.
3. Strong and robust children in the country, in perfect health.

In the first class the observations were made in many cases hourly. They all showed that the temperature varied irregularly and without apparent reason. The daily range amounted usually to two degrees, but in some was more than this. The afternoon rise was often absent, and in many instances the temperature was sub-normal.

In the second class of cases no appreciable variation existed between 9 A.M. and 6 P.M.; this conclusion being the same as that reached by Finlayson.

In the third class, two stout boys, the axillary temperature was taken frequently between 10 A.M. and midnight. The older child, who could run about, had a more uniformly low temperature than the one who could only stand. The highest register was about 10 A.M., and the lowest in the evening. The range was from 97.3° to 98.6°.

The conclusions reached are that the normal temperature of young children does not differ much from adults in its range or height. It is, however, less stable, and when disturbed it takes a longer time to settle down. It is possible, however, that some of these convalescent variations may be caused by enlargement of bronchial or mesenteric glands or other insidious changes, and that perhaps after all an equable temperature record is a nice test of return to perfect health.

In disease the writer points out that one of the characteristics of a child's pyrexia is its liability to sudden and temporary remissions. Records made morning and evening only are often quite misleading. These remissions are frequently seen in typhoid and lobar pneumonia. In the former disease they are often well marked in the second week, and thus the temperature-curve as a means of diagnosis between typhoid and tuberculosis may be of very little value.

In bronchitis and broncho-pneumonia the temperature is usually of an irregularly intermittent type, and is of doubtful value either in prognosis or diagnosis from intercurrent tuberculosis.

What then does the thermometer teach? A pyrexia is good when it is lower in the morning than in the evening; when the variations from day to day are but slight; when but a single fall occurs in twenty-four hours, and whose lowest morning level is near the normal line.

On the contrary, a pyrexia is bad when highest in the morning, which rises during the night; when there are two or three ascents during the day; which is maintained steadily at a point at or above 103°. The temperature in children, as in adults, gives the first warning of mischief after operations.

Tremols: Treatment by Means of Emetics in the Diseases of Children. (*Cron. Med.-quir. de la Habana,* February, 1887.)

The act of vomiting is not always significant of a pathological condition; for example, it is merely a kind of overflow from a full stomach in infancy.

Grasset has divided the agents which produce vomiting into three classes.

1. Those which act directly upon the nervous centres, of which apomorphine is the type. The vomiting which it produces, according to Gubler, is similar to that which is seen in meningitis.

2. Those which operate by reflex action, of which the type is ipecacuanha. This acts directly upon the gastric extremities of the vagus. Tickling of the uvula acts in the same manner.

3. Those which may operate in either of the ways mentioned, the type being tartrate of antimony. In the pathology of childhood there is no indication for the first of these varieties of emetics. The experiments of Chouppe and Dujardin-Beaumetz show that its use by injection may be followed by serious cardiac accidents, and those of Pécholier were followed by syncope from respiratory disturbances. The emetic agents of the third class include the antimonials and other metallic substances.

Of the soluble antimonials, kermes mineral has the most energetic emetic properties; but its action is uncertain and variable according to its degree of pulverization and the proportions of protoxide of antimony or of antimonious acid which it contains.

The yellow sulphate of antimony varies greatly in its activity, and is as well a diaphoretic as an emetic; but it has no application in infantile therapeutics. Of the substance called *emetic*, or the double tartrate of potash and antimony, its rapidity of action cannot be questioned; but its depressing effect, and the diarrhœa which it causes, render it unsafe for general use. In Simon's opinion, it is indicated in cases in which ipecacuanha is ineffective, and it should be immediately suspended after the physiological effect has been obtained. Bouchut, on the other hand, considered that bad results from its use were due to the ingestion of large quantities of liquids, either with the medicine or soon afterwards.

All the salts of copper have an emetic action, but especially the sulphate, its energy being due to the action of a particular acid, which is generated. Its use in croup is very general; and its characteristics are: (1) security of action; (2) laborious character of the act of vomiting; (3) habitual absence of cardio-vascular depression. Its action in cases of croup is, according to some, to modify the infected condition of the blood, which is made manifest by the presence of false membranes in the respiratory passages; according to others, it is to excite not only a mechanical but a general alterative action, with hypersecretion of the mucous membrane and consequent removal of the false membranes. The dose which is recommended by Charles West is twenty-five milligrammes to a centigramme, in a sufficient quantity of water, every quarter of an hour, until vomiting is produced. By others, somewhat larger doses are given. Two grammes of the salt have been given in the course of three days without any bad results. To ipecacuanha is ascribed the supremacy as a means of producing emesis. It has more or less energy in exciting the mucous membrane of the digestive tract, and, when absorbed, excites nausea, accompanied with contraction of the capillaries of the skin and consequent pallor and chilliness. This action is followed by vomiting, by increased secreting action of the intestinal glands, and moderate diarrhœa. These effects are followed by stimulation,—increased secretion in the salivary and cutaneous glands. The value of this drug is frequently experienced in the treatment of disease in children,—especially on account of the slight degree of depression which accompanies it,—the co-existence of hypersecretion from the bronchial and sweat glands, and the benign character of its purgative action. It is the emetic *par excellence* for children. As to dosage, Simon suggests the following table:

For a new-born infant, 0.2 gramme;
For children under one year, 0.3 gramme;
" " between one and two years, 0.5 gramme;
" older children, 1.0 gramme.

(The variety is not mentioned; evidently the *powder* is referred to.) A. F. C.

Wasserfuhr: Should the Healthy Brothers and Sisters of Children who are Sick with Measles be kept from School? (*Rev. Mens. des Mal. de l'Enf.* [from *Berl. Kl. Woch.*, 1886, No. 19], December, 1886.)

The author condemns the legal measure in vogue in Prussia which excludes children from school as soon as a case of measles appears in the house in which they are living. Among the principal reasons for his opinion are:

1. All school-teachers recognize the disadvantage to children who are thus compelled to absent themselves for several weeks from school duties.

2. It has not yet been demonstrated that measles can be communicated through the medium of healthy individuals. It is therefore illogical to use such severe measures for hypothetical causes.

3. The enforcement of the regulation to the letter is almost impossible, since the responsibility for its infraction rests not with the parents, but with the school authorities.

4. The danger to life from measles in children more than five years of age is almost insignificant. If these children escape measles during their childhood, they may be attacked at a later period of life, when they are of greater importance to society, and when the complications of the disease are much more serious. A. F. C.

Roth: The Incubation and Transmission of Epidemic Parotitis. (*Rev. Mens. des Mal. de l'Enf.* [from *Müncher Med. Wochen.*, 1886, No. 20], November, 1886.)

Three cases of this disease are narrated, which are interesting, from the fact that they establish in a precise manner the duration of incubation and the mode of propagation of this disease. The best accredited opinions with respect to the subject of incubation of parotitis have differed widely, the limits being fixed between four and twenty-five days. Doubt has also been placed upon the possibility of the transmission of the disease from individual to individual, except by direct contact with one who is passing through the disease. In the cases which are narrated, the first was caused by actual contact with another patient. In the second, however, the infectious material was evidently brought by the physician to the first patient, out of the hospital, and to the home of the second. In the third the patient used the same bedding which had previously been used by a patient with parotitis. Neither of these three patients had any relations with persons suffering from parotitis, except those which have been referred to. The period of incubation in each of the cases was exactly eighteen days. A. F. C.

Zischnewski: Clinical Observations on the Treatment of Typhus Exanthematicus with Calomel. (*Rev. Mens. des Mal. de l'Enf.* [from *Jahrb. f. K.*, xxvi], November, 1886.)

During the last four years the author has administered calomel methodically upon four hundred patients affected with typhus exanthematicus. To verify the results which had been obtained, one hundred and twenty other children, also suffering from the same disease, were submitted at the same time to a different treatment. At the beginning of the disease the calomel was administered six times daily, in doses of six centigrammes. This dose was generally sufficient to produce the characteristic evacuations. At the end of two days the calomel was replaced by medication of a purely expectant character. The patients of the second series, for whom calomel was not prescribed, were submitted to antiseptic treatment in the shape of sulphate of quinine or salicylate of soda. Cold baths were given, or there was envelopment in moist cloths, with friction. At the beginning of the disease, instead of calomel, purgatives of another character were given. In those cases which were treated with calomel, the disease ran a much more benign course than is usually the case. Sleep was restful, there was never loss of consciousness, and convalescence was rapidly established, complications were of less frequent occurrence, and the mortality was reduced from 12.5 per cent. among those not treated with calomel to 2.7 per cent. with the calomel treatment. The author does not believe that these favorable results were due to the purgative action of the calomel, for other purgatives were far from producing such satisfactory results. It was believed that the calomel acts directly upon the virus of the disease, its action being greatly modified by the drug. A. F. C.

Sniatkoff: The Internal Use of Naphthaline. (*Jour. de Méd. de Paris* [*Meditz Obosrenie,* 1885, p. 630], December 19, 1886.)

The author has used this drug internally, in doses of two grammes daily, in the form of capsules or in powder. He has never seen gastric irritation follow its use. Once in a case of intestinal tuberculosis pain was caused, and a pre-existing diarrhœa was increased. In some cases micturition became more frequent and was accompanied with slight burning in the urethra; the urine also was of a reddish color. These symptoms were probably due to the fact that the drug was not very pure, for they were not observed in cases in which the purity of the naphthaline was beyond question. In several cases of dyspepsia it was used, and all the symptoms, which evidently proceeded from decomposition, rapidly disappeared. One case of infantile summer diarrhœa was quickly cured by its use. In cases of chronic gastro-enteritis in adults, the nausea, eructations, cardialgia, and tympanitis quickly disappeared, but constipation persisted, while in a case of rebellious diarrhœa in which opium, bismuth, nitrate of silver, lead, etc., had failed, a complete cure was obtained in four days. In two cases of severe dysentery a cure resulted within fifteen days, after the patients had taken fifty centigrammes of naphthaline and an equal quantity of bismuth four times daily. In two cases of enteritis the patients seemed to be made worse by the naphthaline. The conclusion was that naphthaline is an excellent antiseptic and antiferment in cases in which there are no typhoid or tubercular lesions. A. F. C.

Simon, J.: Treatment of Convulsions in Children. (*Le Concours Méd.*, December 18, 1886.)

The most frequent cause of convulsions in children under two years of age is indigestion, in cases in which the convulsions are not accompanied by fever. If one is called to such a case an opening injection should be given, and an emetic of the syrup of ipecac combined with the powder of ipecac as soon as the jaws are sufficiently relaxed to admit of its being taken by the mouth. Should the convulsions continue there is no need of exciting the action of the skin with vesicants and sinapisms. Instead, a few whiffs of ether may be inhaled, and then the following potion may be prescribed:

℞ Potassæ brom., 4 grammes;
Moschi, .20 gramme;
Linden hydrolate,
Florum aurantii, āā 50 grammes;
Syr. sim., 20 grammes.
Sig.—A coffeespoonful every quarter of an hour.

If this does not control the convulsions, fifty centigrammes of chloral with the yelk of an egg may be given per rectum. After the convulsions have been controlled there may be fever, or there may not be. Should the convulsions recur and no fever be present, the child may be immersed for a few moments in a bath of warm mustard-water, and this may be repeated if the convulsions continue. Should the convulsions still persist, the child should be wrapped in cotton-wool so as to excite free perspiration. The food should be light and digestible, and consist of milk, soup, etc. If the indigestion is not relieved, another attack of convulsions will almost certainly occur.

A. F. C.

II.—MEDICINE.

Henoch: The Pathology of Cerebro-Spinal Meningitis. (*Rev. Mens. des Mal. de l'Enf.* [*Charité Annalen*, xi., 1886], November, 1886.)

Under the name of cerebro-spinal meningitis the author describes a particular form of simple, non-tuberculous meningitis, which is of more frequent occurrence in childhood than is usually admitted. Its study is of the highest importance, from a diagnostic point of view; and its characteristic consists not only in its long duration, but also in its alternate periods of improvement and deterioration, which leave the physician in suspense for a long time,—balanced between hope and despair. The usual course of the disease is as follows: Children who have been in apparent health are suddenly seized with high fever, which continues several days with feeble morning remissions, with intense headache, vomiting, pain along the nucha, and, in rare cases, contractures of the muscles of the extremities and cutaneous hyperæsthesia. At the end of about two weeks the fever ceases, the other symptoms disappear, and everything seems to be going on favorably, with the exception that the pain in the nucha continues and indicates that the trouble still persists. After an interval of from one to several days the fever reappears, the general condition becomes very bad, and the pains in the head and nucha resume their original intensity. These remissions and exacerbations may be repeated several times in the course of the same week, leaving the physician in doubt as to the accuracy of his diagnosis. Tuberculous meningitis is taken into consideration; but after eight or ten weeks, or even longer, the patient finally recovers. The true nature of this disease is not yet fully known. Treatment has no influence upon its progress, and this point is particularly insisted upon by Henoch, who has never seen a case which terminated fatally. From the stand-point of pathological anatomy, it would appear, from the symptoms, that the disease was one which involved the meninges of the brain and those of the spinal cord to a lesser degree. The etiology of these cases is always very obscure, and their relation to epidemic cerebrospinal meningitis is not known. The latter disease may present the same symptoms, but it is believed that it would not be possible to consider all the cases which present the phenomena described as cases of infectious cerebro-spinal meningitis. The disease does not always follow this slow course; in fact, two cases are narrated in which the type was acute and overpowering.

In connection with this paper, the author describes the "symptom of Kernig." This consists in a contracture of the flexor muscles at the knee-joint, while the thigh is flexed upon the pelvis. He has observed this phenomenon in several patients with meningitis. A. F. C.

Atkinson: Scarlatinal Nephritis. (*Rev. Mens. des. Mal. de l'Enf.* [*Internat. Jour. of Med. Sci.*, July, 1886], December, 1886.)

The renal catarrh, which almost always accompanies scarlatina, varies in intensity in different epidemics. In some epidemics albuminuria is present in seventy per cent. of the cases; in others, not more than five per cent. are so involved. Jaccoud has not seen a case of scarlatinal nephritis in his service during the past fifteen years, and he attributes this result to the use of a milk diet. According to the author, albuminuria and dropsy may appear at any stage of the disease, but they are most frequently seen after the first week. If the urine is not examined methodically, the first announcement of this condition may be made by an attack of uræmic convulsions. The gradual diminution in the quantity of urine discharged is also a sign of great importance. The progress of scarlatinal albuminuria is usually favorable. The dropsical condition, which involves the tissues of the face, may also involve the serous cavities. It sometimes causes a complete arrest of desquamation. Hæmaturia is often present,—especially during the third and fourth weeks,—but it has not a grave significance. The quantity of albumen varies considerably, but this is of less importance than the quantity of urine discharged. The conclusions which have been drawn by Glax with reference to the urine in scarlatina are:

1. The total quantity may be simply diminished during the febrile condition, and return to the normal type after defervescence.
2. At the beginning of the fever there may be an increase

in the quantity and then a diminution. The future of such cases is uncertain. Desquamation takes place imperfectly, and the action of the heart is feeble. In some cases there is cutaneous œdema following anæmia, and in such cases no albumen is found in the urine.

3. The quantity of urine, which was small during the fever and then returned to the normal, may again be diminished, and continue so until death. If the quantity of urine is to the fluids ingested as two to three, it often happens that uræmia is imminent, even if no albumen has been found in the urine. Albuminuria does not belong to any particular form nor to any state of gravity of scarlatina. It may occur in mild cases as well as in severe ones. The scarlatinal kidney most frequently presents the lesions of glomerulo-nephritis of Klebs.

The treatment consists, above all things, in preventing the patient from becoming cold. According to Mahomed, the slightest chill during convalescence is sufficient to cause temporary albuminuria. Jaccoud considers that a diet of milk is an absolute preventive of nephritis. Warm affusions or rapid immersion in a warm bath, according to Liebermeister, ought to be used to keep the skin in action. Stimulant diuretics should be avoided. Large quantities of water, as a drink, will serve a useful purpose as a diuretic. Leeches, cups, sinapisms, or cataplasms over the situation of the kidneys may be of service. Paracentesis of the abdomen may be indicated in case an extensive dropsical effusion is exercising great pressure upon the kidneys. A. F. C.

Foeke: The Treatment of Pharyngeal Diphtheria. (*Rev. Mens. des Mal. de l'Enf.* [*Centr. f. Kl. Med,* 1886, No. 35], November, 1886.)

The author's method of treatment includes the use of chlorate of potash combined with hydrochloric acid, the theory being that the advantage to be gained is derived from the liberation of a large volume of oxygen. The results which are reported from this method are very satisfactory. Two formulas are used in carrying out the method, viz.:

℞ Potassæ chlor., 4 grammes;
Syr. simp., 20 grammes;
Aquæ, 200 grammes.

℞ Acidi hydrochlor., 8 grammes;
Syr. simp., 20 grammes;
Aquæ, 200 grammes.

To adults a dessertspoonful is to be given every hour, to children a teaspoonful, and to infants half a teaspoonful, of each of the mixtures. After the fever has fallen they should be given only once in two hours. The advantages of this plan of treatment are—

1. The fever will disappear in thirty-six to forty-eight hours.
2. The lymphatic glands will be only moderately swollen.
3. There are no septic phenomena.

This method is of no avail in cases in which paralysis of the larynx occurs in the first stages of the disease. It is also of no benefit if it is postponed until the disease is under full headway, or until symptoms of septicæmia have occurred.

(The usefulness of the method is evidently very limited. If the oxygen is the potent agent, why not inhale it ready-made from a receiver, as is often enough done in such cases in New York practice, instead of forcing the stomach to act as the medium for its elaboration? Then there is the additional danger of poisoning from an excess of the potash salt.)

A. F. C.

Le Gendre: Treatment of Diphtheria by Antiseptic Vaporizations, by Different Medicaments, by Intubation of the Larynx. (*Le Concours Méd.*, February 22, 1887.)

The first plan which the author comments upon is that of Paterne, who uses a preparation for vaporization which was suggested by the mixture which was recommended by Renou.

The mixture advocated by the latter consists of carbolic acid, benzoic acid, and salicylic acid, while Paterne uses carbolic acid alone, with a sufficient quantity of water. All successful treatment of diphtheria should rest upon the application of the principle of antisepsis, and antiseptics can be most successfully as well as most readily applied by means of vaporization. This method also insures rapid and certain absorption, and has the double advantage of supplying steam as well as an antiseptic agent. Vaporization causes an abundant secretion of the mucous membranes, with easy expectoration, and by acting upon the nerve-endings tends to overcome the spasmodic element.

Aberlin, of Stockholm, reported that the inhalation of steam alone tended to reduce the mortality from capillary bronchitis of children, under his observation, from forty-eight to eighteen per cent., and other testimony as to its value in the throat and lung diseases of children is furnished by Parrot, Graves and Peter, Budd, Archambault, and Espine and Picot. With respect to the value of carbolic acid as an antiseptic in this disease Paterne says, "The success of Listerian surgery indicated its value in advance of experimentation; and the results which it has yielded forbid any departure from its employment." The solution which is recommended is a 1 to 20, and a few dried leaves of eucalyptus are to be added. Of thirty cases of diphtheria treated by this method, twenty-four recovered. In scarcely any of these cases did the urine show any evidence, by its color, of the presence of carbolic acid, and it is considered somewhat remarkable, since the organism must have been more or less saturated with carbolic acid. Galicier, of Versailles, recommends the internal use, in diphtheria, of a pill made in accordance with the following formula:

℞ Calcii sulphidi, .05 gramme;
Digitalini,
Quin. arsen., āā .001 gramme.
Ft. pil. nu. una.

This pill should be given hourly until the fever and the general symptoms are relieved, and is intended for adults. For children only half the quantity should be given. The powerful character of the digitaline and its energetic action upon nervous centres must be borne in mind. The author also briefly describes the revival of Bouchut's idea with respect to the tubage of the larynx by O'Dwyer. The instruments are described as well as the method of introducing them. The difficulties of introduction and removal are such that the author believes one should have seen the operation performed before attempting to do it himself. The statistics of O'Dwyer, Waxham, Northrup, and others, give forty-nine cases with eighteen successes, which is a better percentage than is usually obtained from tracheotomy. The author expects to be initiated into the practical working of the operation at the approaching International Congress at Washington. A. F. C.

Vogelsang: Oxygenated Water in the Treatment of Diphtheria. (*Jour. de Méd. de Paris* [*Rev. Hebdom. de Thérap.*], October 24, 1886.)

The author reports excellent results from the use of oxygenated water in the treatment of diphtheria, its antiseptic properties having suggested its use. In the first case in which it was tried, the child was seized with a violent chill, headache, and pain in the neck. There was also a profound degree of prostration. The patient was not seen until the third day of his sickness. At that time the posterior wall of the pharynx was entirely covered with thick false membranes. The nasal mucous membrane was much swollen, respiration was very difficult, the pulse-rate was 100 to 120 per minute, the temperature reached 39° to 40° C. The treatment consisted in sponging the entire body with vinegar, iced water, compresses to the head and neck, the internal use of cognac and water, and the following formula:

℞ Two-per-cent. solution of peroxide of hydrogen, 120 grammes;
Glycerin, 8 grammes.
Sig.—Teaspoonful every two hours.

On the following day the false membranes had disappeared, and the patient took nourishment with eagerness. A second case was similarly treated, and with equally good result.

A. F. C.

Descroizilles: Note on the Use of Terpine. (*Rev. Mens. des Mal. de l'Enf.*, December, 1886.)

Three children with pulmonary tuberculosis (or what was believed to be such) were treated under the author's direction with this medicament, and with very satisfactory results. It was given in the form of an alcoholic solution, and was well tolerated by all but one of the patients, who was able, however, to take it for several weeks and to derive great benefit from its use. The same good results have also been seen by Germain Sée and Lepine in their experiments with the drug. It is believed that in terpine we have a very useful agent which is to be preferred to creasote, gas-tar, or turpentine, because it does not fatigue the digestive organs. It may be used both by children and adults in all cases in which there is exhaustion from suppuration in the air-passages, whether this is connected with phthisis in its primary stage, with or without hæmoptysis, whether excavations in the lungs have already been made, or whether there is only bronchial hypersecretion without tuberculosis. As to dosage, it will almost always be possible to administer to young children three or four decigrammes of the drug in the course of twenty-four hours, and, if necessary, this may be increased to six decigrammes. It may also be used in the form of a pill, white wine may be substituted for the alcohol as a medium, a certain quantity of an acid syrup may be added to the solution, or a simple aqueous solution may be used. If water is used as a vehicle at least two hundred grammes should be used for each gramme of the terpine, and it will be better to add a sufficient quantity of some astringent syrup. It should be taken, when possible, with the meals, to prevent intestinal disturbance. A. F. C.

Lax: Treatment of Diphtheria with Pilocarpine. (*Jour. de Méd. de Paris*, February 6, 1887.)

The author has published the results of the use of this drug in an epidemic of diphtheria, which were very satisfactory. Sixteen children suffered from the disease, under his observation, between September 24 and November 6; six of these were treated with local applications of a three-per-cent. solution of nitrate of silver, and chlorate of potash, both in the form of gargle and by ingestion into the stomach. Four of the patients recovered, two died. The other ten were all treated with hydrochlorate of pilocarpine exclusively, and all recovered. Some of them had the disease in a very severe form. Under the influence of this drug the secretion of mucus and saliva was increased, and quantities of false membrane were expelled from the mouth and nostrils. The respiration became easier, the fever disappeared, the appetite returned, and the children were cured after three to five days of treatment. In all of the cases a *herpes labialis* followed the disease. The following formula was used in this series of cases:

℞ Pilocarpini hydrochl., 0.2 to 4 grammes;
Pepsin, 0.06 to .08 gramme;
Aquæ destil., 70 grammes;
Acidi hydrochl., gtt. ii ad iii.

The dose was a small or large spoonful, according to the age of the child (frequency of dosage not stated). Tokay wine was also given, and warm fomentations were made to the neck. After three days of this treatment all traces of false membrane had disappeared from the tonsils and the pillars of the pharynx. Guttmann reports eighty-one cases of diphtheria treated with pilocarpine within a year and a half without a death. He believes that this agent is certain in its action, and superior to all medicaments which have been used for this disease to the present time. In most of his cases the pilocarpine treatment alone was used. A cure was effected in one to three days in benign cases, and in nine to eleven days in severe ones. Pilocarpine was combined with pepsin, both on account of the useful effect of the latter upon intestinal catarrh and because of its solvent action upon false membranes. A. F. C.

Balzer and Grandhomme: Syphilitic Broncho-Pneumonia in the Fœtus and New-Born Infant. (*Rev. Mens. des Mal. de l'Enf.*, November, 1886.)

Syphilitic pneumonia is, at the present time, well understood, thanks to the labors of Virchow, Cornil, Lancereaux, Fournier, and others. Syphilitic lesions of the lungs in the fœtus and new-born infant are much more frequent than in the adult, and have been carefully studied by Depaul, Lebert, Mollière, Parrot, and others. The author's paper is based upon investigations made in connection with ten autopsies in which syphilitic broncho-pneumonia was present. These cases were distinguished as—

1. Recent broncho-pneumonias, of slight intensity, with pulmonary congestion or splenization, and in which the lesions were not evident to macroscopic examination.

2. Broncho-pneumonias with disseminated foci at the posterior portion of the lungs, corresponding to the subacute form of broncho-pneumonia in connection with other infectious diseases.

3. Broncho-pneumonias with white hepatization, without dilatation of the bronchi, corresponding to the pseudo-lobar hepatization or carnization of other forms of broncho-pneumonia, and bordering upon the condition of fibro-caseous or gummatous degeneration.

4. Broncho-pneumonias with dilatation of the bronchi.

The first form includes cases which are without apparent broncho-pneumonic lesions, and those in which there is pulmonary congestion. The latter constitute the spleno-pneumonia of Jaffroy, in which there is congestion with desquamation of the epithelium. In these cases a great number of small micrococci were found in the walls of the vessels and of bronchi, in the effused blood, in the interior of the alveoli, within the cells, or free without the cells, and in the zooglœic masses. There were also many white corpuscles within the congested vessels. These conditions explain the hemorrhages which frequently occur in such cases. In the second class the microscopical examination showed recent changes, which had made rapid progress and were comparable to those of subacute broncho-pneumonia in connection with other infectious diseases. In these cases the predominant features consisted in interstitial lesions, tendency to very rapid organization, and to sclerosis, and a very great intensity of the lesions of the vascular system.

In the third form the lesions, according to Parrot, occupy the sloping portions of a lobe, taking the form of a vertical band. The lobules are prominent, hard, distinct, and of a grayish or reddish-salmon color.

In the fourth form there is a chronic broncho-pneumonia with sclerosis, deformity, and beginning dilatation of the bronchi. The changes are most apparent in the lobular and intra-lobular bronchial tubes, the alveoli being involved to a much smaller degree. The sclerosis is very noticeable in the peri-bronchial and peri-lobular spaces, around the arteries and veins; the arteries are obliterated in many cases, while the veins are congested and dilated to a remarkable degree.

In the evolution of syphilis in the fœtus and new-born infant the visceral lesions develop in a parallel manner with the cutaneous ones, or even precede them. There is in these cases a general infection which may attack all the tissues, but does not always produce lesions which are apparent. As in almost all infectious diseases, the air-passages and the lungs are attacked. In the case of infants who have not been still-born, syphilis of the lungs almost always takes the form of broncho-pneumonia. The action of microbes in these cases is not yet settled, and it is not yet positively known whether they exert a profound influence upon the lesions. The action of pulmonary syphilis in the fœtus and new-born infant is essentially the same as it is in the adult, though in the former it has an acute and a subacute form, and excites diffuse inflammation of all the organs of the skin, and of the mucous membranes, especially the mucous membrane of the air-passages, and also the pulmonary parenchyma.

Homolle has described a pneumonia which corresponds to the carnization in non-syphilitic broncho-pneumonia, a desquamative broncho-pneumonia which is analogous to the white pneumonia of syphilitic new-born infants. It corresponds to the so-called carnization in non-syphilitic broncho-pneumonia. He also mentions a sclerous broncho-pneumonia without caseous or gummous nodules, which is a form in which there is predominance of the bronchial lesions, fibrous tissue around the bronchi and bronchioles, causing stenosis or ectasia. He also describes a sclero-gummous broncho-pneumonia, which is the most common form of pulmonary syphilis in the adult. In general, it may be said that pulmonary syphilis at all ages is almost identical. A. F. C.

Owen: Diphtheria with Unusual Paralytic Sequelæ—Muscles of Respiration Affected—Recovery. (*Lancet,* April 2, 1887.)

Primary diphtheritic attack was not very severe, and convalescence began after a week's illness. After sixteen days all signs of the diphtheria had disappeared, excepting a trace of albumen in the urine, which lasted for six weeks. On this day it was noticed that there was difficulty in reading print, as the letters seemed to be confused. Next symptom was the loss of knee-jerk on the twenty-fourth day. This continued markedly for two months and a half, and could be detected three months later. On the thirtieth day the voice became nasal, and the movement of the soft palate was found impaired. Some of the liquid food came back through the nose. On the forty-fourth day the voice was reduced to a whisper, no fluid could be swallowed, and the soft palate was immovable. All food was vomited. Previous to this the diaphragm was noticed to act feebly, and now it ceased to act. The condition was alarming, the respirations shallow and irregular, with an occasional ineffectual cough, and very slight entrance of air into the bases of the lung. Heart was feeble, but regular. Atropia was given internally. He was sensible, though drowsy and prostrate, and bluish because of partial paralysis of the intercostal muscles, in addition to complete paralysis of diaphragm.

From the forty-sixth day he began to improve; the action of the diaphragm and intercostals returned; he took food without vomiting, and his voice became stronger.

He improved from that time on; his voice became normal, and there was no trace of albumen in the urine, although the knee-jerks were still absent.

Throughout the illness there was no loss of cutaneous sensibility, and the intensity of the palsy fell upon the muscles of deglutition and respiration.

The author inclines to the theory that diphtheritic paralysis is due to peripheral neuritis, and is not of central origin.

Barr: Abscess of the Brain, resulting from Disease of the Ear. (*Brit. Med. Jour.*, April 2, 1887.)

The ground is taken by the writer that the seat of the ear-disease is nearly always the middle ear, and not the internal ear, as some affirm. When the internal ear is implicated, it is nearly always secondary to disease of the middle ear.

The acute form of inflammation of the middle ear rarely leads to brain-mischief. It results from chronic forms where the bones have become carious, usually after the disease has run on for years.

When this predisposing cause is present, an injury is often the exciting cause of the intracranial abscess. This injury, in the writer's observation, had been in the form of a blow on the ear, on the head, diving in the sea, and in two cases followed some surgical operation on the ear.

What proportion of the cases of cerebral abscess are due to disease of the ear?

The general statistics given have shown a proportion of about thirty-three per cent. Dr. Barr, from his own wide experience, places it at fifty per cent. at least, since so many cases of latent ear-disease have been previously overlooked.

Regarding the *seat of the abscess*, in six of seven reported cases the abscess was situated in the temporo-sphenoidal lobe above the affected ear. In all cases the odor from the pus was extremely fetid.

From other sources, seventy-six cases of abscess in the cerebrum had been collected. The location here was as follows:

Middle lobe, fifty-five cases, or seventy-three per cent.; thirteen cases were in the cerebellum; four in cerebrum and cerebellum; two in the pons, and one in the crus cerebri.

In all cases the abscess was on the same side as the diseased ear.

Barbier: Note concerning the Slowness with which the Lesions of Rubeola are manifested upon the Larynx. (*Rev. Mens. des Mal. de l'Enf.*, December, 1886.)

The author's investigations with reference to the symptomatology of this disease have shown that laryngitis of a severe form, associated with rubeola, manifests the following characteristics: Its beginning is not sudden, but the severe phenomena connected with the larynx, and manifested in the closing stages of rubeola, indicate merely an aggravation of precedent laryngeal lesions. Attacks of suffocation are infrequent, and less severe than those of croup, but the permanent obstacle which is developed gives rise to a continuous restraint upon the respiratory act, which is accompanied with a more or less painful whistling inspiration, though the expiratory act may be normal. The voice is usually lost, and the patients avoid conversation, as it evidently requires painful efforts. When they cry, instead of having the normal *timbre*, the voice is thin. The cough is of a stridulous or barking character, but is always thin. Pressure upon the larynx sometimes causes pain. If the epiglottis is involved, deglutition may be interfered with, though there may be no paralysis of the *velum palati.* This laryngitis may be so severe in character or in its accompaniments that tracheotomy will be indicated, and the results of the operation are likely to be far better than when it is performed for diphtheritic croup following rubeola. Other cases of this disease get well spontaneously. Stomatitis and aphthous angina may coexist with this disease and assist in establishing the diagnosis. The lesions of the disease may be an intense inflammation, with purulent exudation, ulcerations of the mucous membrane, or peri-laryngeal abscess.

A. F. C.

Eisenschitz: Epidemic Cholera in Children. (*N. Y. Med. Presse* [Abstracted], January, 1887.)

Of thirty-eight cases which were reported by the author the mortality was twenty-one, or fifty-five per cent., a ratio which is not greater than prevails from the disease in adults. Of seven infants only one survived. During this epidemic cholera infantum was not more prevalent in the author's experience than it was the two previous years, when there was no epidemic cholera. The pathological-anatomical changes are the same as are found in adults, except that the enlargement of the solitary glands and Peyer's plaques is somewhat more pronounced. This glandular condition disappears with the appearance of the typhoid stage, at which period pulmonary infarcts are present in many cases. The prognosis is more favorable if there was diarrhœa in the prodromal period, and if vomiting were more pronounced than diarrhœa. Improvement of the patient may be misleading, for even after long intermissions asphyxia may occur. The duration of the disease in cases which recover is, during the algid stage, six to thirty-six hours; in the typhoid stage, six to ten days; in fatal cases the algid stage lasts nine to fifteen hours; the typhoid five to fifteen days; in children under four years of age the algid stage may last twenty-four hours. Sclerema, in these cases, was never observed by the author. By typhoid is meant a combination of nervous changes, somnolence, rapid pulse, dry tongue and lips; there may be elevation of temperature, enlargement of the spleen, and meteorism; there is always vomiting, but no singultus. *Cholera sicca* was observed in two cases. The vomited matter resembles that which is vomited by adults, but the stools are often of a greenish-yellow color and fluid in character. Tenesmus is present only in the typhoid stage. Monti has observed convulsions in seventeen cases; but the author has observed this condition only in cases of hydrocephaloid (with cholera), for which reason he thinks that cholera has no direct bearing upon the production of the convulsions. Post-mortem elevation of temperature was observed. Unfortunately, opium can be given in these cases only in very small quantities, owing to the intolerance which most children manifest towards it. The creasote treatment of Monti is not considered especially valuable. To refuse fluids to a patient is considered cruel; analeptics are of no use; warm baths are well borne, and are not unpleasant to the patient; wine and quinine should be given during the typhoid stage. Semmola has reported good results from the hypodermic injections of large quantities of water, nothing else being used except small quantities of opium. A. F. C.

Uppenkamp: The Etiology and Prophylaxis of Ophthalmo-Blennorrhœa Neonatorum. (*Rev. Mens. des Mal. de l'Enf.* [Berlin Thesis, 1885], September, 1886.)

The author believes that this condition is produced by the direct action of gonorrhœal secretions from the vagina during the course of parturition. Other vaginal secretions may excite a catarrhal inflammation of the conjunctiva, which may be intense, but will never cause blennorrhœa of the eyes. The long duration of the second stage of labor, especially in vertex presentations, premature escape of the amniotic fluid, and operative intervention are causes which predispose to infection of this character. The report is based upon the observation of two hundred and forty-three cases at the clinic of the Berlin Charité Hospital.

Since 1881 Crédé's prophylactic method of treatment has been employed. Its good results are evident in the fact that in 1870 seventy cases of ophthalmia were seen at this clinic, in 1884 only six. A five-tenths-per-cent. solution of nitrate of silver is recommended for instillation into the eyes at birth, instead of the two-per-cent. solution recommended by Crédé. The former is sufficiently active, and does not produce a decided local reaction, as is sometimes the case with the latter. A. F. C.

Monteuuis: A Clinical Study of Fevers and the Antipyretics which have been recently introduced, in connection with the Diseases of Children. Paris, 1886. (Reviewed by Mercier, in *Rev. Mens. des Mal. de l'Enf.*, November, 1886.)

Fever has a particular importance and physiognomy in the diseases peculiar to children which have not been detailed by any other author. Its beginning is sudden, without an initial chill, though this may be replaced by a convulsion. The hyperthermia is marked by a rapid, irregular, and decided course. The rapid pulse is not a good indicator of the febrile condition on account of its frequent anomalies, even in the condition of health. The disturbances of nutrition quickly lead to emaciation. The morbid symptoms which are the most conspicuous are those which pertain to the nervous system, which, in connection with a pneumonia, may present the aspect of cerebral disease. Three therapeutic indications are furnished by this condition: (1) To diminish febrile combustion; (2) to soothe and sustain the nervous system; (3) to counteract the great loss to the organism from faulty nutrition. The recently-discovered antipyretics respond satisfactorily to these indications. The first series of these medicaments, the use of which is now almost abandoned, includes phenic acid, salicylic acid, salicylate of soda, and salicylate of bismuth,—the latter of which is still used in typhoid fever, especially for the intestinal disturbances of that disease.

The new series includes resorcine, kairine (the effects of which may be compared with those of phenic acid), antipyrine, and thalline.

With the last-mentioned substance the author has obtained excellent results in typhoid by giving thirty centigrammes daily, in two equal doses. Antipyrine has proved more serviceable than either of the others, and is likely to continue to be used. The effective dosage will not usually be more than one gramme, twice daily. The principal charges which have been brought against antipyretics are:

1. That they do not act upon the pyrogenic agent.
2. That they reduce the temperature, but not the fever.
3. That they have no effect upon the duration, the course, or the termination of the disease.
4. That their action is of very brief duration.

Against the new antipyretics it has also been charged:

1. That they excite sweating, which prostrates the patient.
2. That they sometimes induce hypothermia.
3. That they intoxicate the nervous system by the sudden changes of temperature which they induce.
4. That they exercise a harmful action upon the organism, and especially upon certain central organs, by adding toxic phenomena to the morbid phenomena already existing.

These charges are answered as completely as possible; and the author, furthermore, inquires whether each of the new antipyretics has not particular indications, and whether it is not necessary to give preference to one or the other substance, according to the disease. Huchard has stated, in reference to antipyrine, that he is convinced that it is almost a specific for febrile accidents not only in phthisis pulmonalis, but in almost all pulmonary diseases. It seems to have an elective action upon congestive and inflammatory diseases of the pulmonary apparatus. This book, in general, is highly commended by the reviewer.
A. F. C.

Cadet de Gassicourt: Clinical Treatise on the Diseases of Childhood, in three volumes of 600 pages each. Second edition, revised, corrected, and enlarged. Paris, 1887. (Review in *Rev. Mens. des Mal. de l'Enf.*, November, 1886.)

The first volume of the first edition of this work appeared in 1880, and the third in 1884. The preface to the second edition is dated July, 1885. This work received the Monthyon prize of the Académie des Sciences; it is not a treatise on infantile pathology, but represents the work of a clinician. He has in these volumes made public the rich clinical treasures which have long been accumulating in the Hospital Sainte-Eugénie, though he does not mention that the largest part of these treasures are the product of his own experience. There are two ways of treating such clinical work as has come under the author's observation. One is to record, day by day, the facts as they present themselves, and to unite them under a common title, without classification, without concerning one's self whether they comprehend the entire subject under consideration or not, without interpreting them in accordance with the traditions of experience and the most recent acquisitions of science, without making generalizations which are indispensable for the guidance of practitioners in choosing a proper plan of treatment. The other is much superior, and is the method which is followed by the author, each subject being conscientiously weighed and considered in all its bearings, with reference to all the requirements of the practitioner. Since he has not been able to include every subject, the author has chosen those which are most important, in the light of the increasing knowledge from daily experience. These subjects have been expounded in clear and natural classifications, laws being deduced which will serve for the guidance of the reader and the practitioner, the laws being always reinforced by observed facts. The treatise is always methodical, but never absolutely theoretical nor systematic. Thus the first volume is entirely devoted to pulmonary diseases; the second, to diseases of the heart, rheumatism, chorea, whooping-cough, mumps, varicella, rubeola, scarlatina, and typhoid fever; the third, to diphtheria and the cerebral diseases. This *ensemble*, though incomplete, leaves few diseases unconsidered which are peculiar to children. The second edition includes a general survey of the field of infantile pathology. The chapters upon tuberculosis have included all the recent investigations in this field. The chapter upon bronchial adenopathies has been greatly modified, and that upon congenital diseases of the heart has been enriched by all the recent investigations in the pathological anatomy of that subject. In connection with the pulmonary diseases of childhood great stress has been laid upon the importance which pertains to the element of congestion. This is especially the case in connection with acute bronchitis and broncho-pneumonia. Congestion holds a double position in the pulmonary affections of childhood; it is an idiopathic condition, and also a process which is common to different pulmonary diseases, from which it follows that a distinction may be made between those diseases in which congestion is present and those in which it is absent. The chapters upon diphtheria occupy almost an entire volume, and are rich in scientific and practical documents. They illustrate the multiplicity of aspects in which diphtheria may present itself, and consider the disease entirely from a clinical stand-point. One noticeable chapter is that upon *diphtheria of long duration.* The work is recommended as one which is uniformly good. A. F. C.

Gaube: Physiological Analysis of the Waste Matters of Digestion in Children suffering from Oxycrasia, or from Athrepsia in general. (*Gaz. Méd. de Paris*, November 27, 1886.)

The milk of mammalia is composed of five elements: albuminoids, represented by caseine; sugar, by lactose; fat, by butter; water, and earthy salts. In the digestive passages some of these elements are absorbed, and further modified in the circulation; others are digested,—that is, prepared for assimilation. The waste matters in the digestion of milk vary with the quality of the milk and the animal species from which it is obtained. The first act in the digestion of milk is the coagulation of caseine in the stomach by the action of the acids of the stomach. In the stomach of a child there is no absorption of albuminoid matter, but its mucous membrane does absorb the dissolved sugars and earthy salts. After the coagulated caseine has reached the duodenum, where it is also joined by the fatty matters, it gradually loses its acid reaction and undergoes peptonization, the fat being emulsified, and absorption continues as the mass progresses through the intestines. The waste matters contained in the large intestine and the rectum of the cat are mildly acid; they are neutral in young dogs, and neutral or weakly alkaline when normal in infants at the breast. As a matter of fact, however, the fæces of nursing infants are more frequently acid than neutral, owing to the disturbing influences which are exerted upon the majority of nursing mothers. In a normal condition they (the fæces of nursing infants) are yellow, homogeneous, and inodorous, and composed of coloring material, soaps, fatty matters, salts, débris of caseine, mucine, taurine, ferments, and water. The coloring matter is furnished by the bile, and the acids of the stomach are partly neutralized by the partial decomposition of the biliary salts. The soaps are more abundant, and have a greater resisting power when an infant is nourished with cows' milk than when it is nursed at the mother's breast. The fatty matter is supplied by the unabsorbed butter, and perhaps by the bile. The caseine, like the fat, is in small quantities which have escaped peptonization and absorption, and is expelled as a foreign body. The salts originate from the bile, and from the intestinal secretions; the mucine also comes from the latter source. The crystals of taurine, which are found in very small quantities, indicate the transforming effect of oleic acid. Of the pancreatic ferments one is abundant and active, and quickly transforms dextrine into glucose, and starch into dextrine; the other has a feeble emulsifying power upon the fats. Digestive disorders in infancy are the cause of numerous pathological conditions. Athrepsia and oxycrasia, for different reasons, consist of digestive troubles, which, after a time, completely overpower the digestive faculty. The waste matters of digestion in children who are suffering with athrepsia or oxycrasia are of a very complicated character. They are liquid, green or red, contain accumulations of coagulated caseine, are of a glairy consistency, an acid reaction, and a repulsive odor. They contain lactic and butyric acids, lactose, dextrine, glucose, stercorine, possibly pieces of meat or vegetables, emulsive and saccharifying ferment, peptones, albumen, soaps, salts, urea, glycerin, amylic alcohol, aldehydes, and acetone. Several conditions should be considered during the digestive act in athrepsic children.

1. A child may be nursed by his mother whose milk may appear to be normal, but she has an arthritic tendency, and the child is suddenly seized with diarrhœa and vomiting; the fæces have an acid reaction, and are rich in lactic ferment. In such cases the author thinks that the condition of the barometer, the hygrometric condition of the air, and the size of the child must not be overlooked. This is a condition of oxycrasia.

2. A child may be nourished in part by breast-milk, and in part by milk from some domestic animal. It is seized with diarrhœa and vomiting; the stools are acid, with an offensive odor, and contain lactic and butyric acids. The chlorides are deficient in quantity.

3. The child is nourished entirely with animal milk, and the results are the same as in the previous condition, but morbid phenomena of a graver character are quickly evolved. The stools are rich in soaps, albumen, and urea.

4. The child is fed exclusively upon starchy matters, soups, or the so-called farinaceous foods. The results of this improper alimentation are chronic enteritis, choleriform enteritis, and rachitis. Athrepsia has indelibly marked some children who have been thus fed, and they will carry the traces for life. The fæces are acid, offensive, contain lactic and butyric acids, dextrine, glucose, possibly some saccharine ferment, and stercorine. In subjects of oxycrasia the medium in which digestion is carried on becomes acid; the pancreatic ferments are paralyzed by this acidity, which is so decided that it is not neutralized by the bile. The acid reaction progresses from the intestine to the stomach; the latter will no longer absorb the liquid portion of the milk, but projects it into the intestine where the lactose is transformed into lactic acid, and this nullifies the action of the pancreatic secretion. But in some cases the digestive passages do not take on an acid condition, the

alimentation being the cause of other disorders. Thus the milk may be too rich in caseine; the coagula in the stomach then become too large and hard, and are vomited. The stomach becomes fatigued, lactose is not absorbed, and a series of fermentations, including the butyric, follow. Children who are fed upon starchy foods are lean, though their bellies may become distended by gas, and, subsequently, on account of atrophy of the muscular fibres of the intestine, the pancreatic secretion becomes changed in character, and is unable to digest the starches, which decompose in the intestines. The fermentation of these starches leads to the formation of chemical compounds almost all of which are incompatible with life, and hence it follows that so many children die who are subjected to this form of diet. The power of the pancreatic ferments is regulated by the character of the alimentation. When that is natural and proper, trypsine and emulsive ferment are not often found in the fæces of a child, though diastase is frequently found. Trypsine and emulsive ferment do not exist in the fæces of a child fed exclusively upon cows' milk; diastase may be found in them. The three ferments are absent from the fæces of children fed with starchy food. The author concludes that in oxycrasia, which is one of the forms of athrepsia, heredity exercises an important action, that in oxycrasia there is an excess of acidity in the digestive passages, and that all children which are not brought up at the breast suffer, some more and others less. A. F. C.

III.—SURGERY.

Droixhe: Vesical Calculus in Children. (*Jour. de Méd. de Paris*, February 6, 1887.)

If a child has a stone in his bladder, he will have frequent and pressing desire to urinate, and he will experience sharp pain either when urination begins or when it ends. This frequency of micturition is explained by the hyperæsthesia of the vesical mucous membrane which is constantly irritated by the foreign body in the bladder. As soon as a small quantity of urine has reached the bladder the desire to expel it becomes irrepressible. The pain in urination is particularly keen in the lower portion of the abdomen and at the end of the penis, and it often compels the child to drag upon the gland and the prepuce in the hope of obtaining relief. As a result, these parts become enlarged from chronic congestion. The severe pain may continue ten or fifteen minutes after urination has ceased, to be renewed with the next urination. If the child exercises with any degree of violence, hæmaturia will be likely to result, and the same result will follow riding over a rough road or in an uncomfortable vehicle. The hæmaturia is an excellent diagnostic sign of vesical calculus. This condition may not be of long duration; it may even be limited to a few drops of blood which follow urination. The urine may also contain small quantities of mucus and pus, and, rarely, uric acid. The diagnosis must be confirmed, of course, by exploration of the bladder, and the search for a stone in the bladder of a child has more elements of difficulty than the same operation in an adult. The capacity of a child's (boy's) bladder is relatively large, and its walls are soft and depressible. There is no prostate to assist or facilitate the examination, no well-defined neck, and no bas-fond in which the stone might lodge. Considering all these conditions, it is easy to see that the stone may readily escape one's search, or be found with great difficulty. It is unnecessary to say that such an examination should be made under chloroform, and that the rectum should be empty so that a rectal examination may also be made. From fifty to eighty grammes of a warm solution of boric acid, to which a small quantity of cocaine has been added, should be thrown into the bladder to facilitate its exploration. It is not unusual to find, with children who are suffering from stone, either a hernia or a prolapse of the rectum, which have been caused by the laborious efforts to empty the bladder. After children have suffered from this condition for a long time, they lose their appetite, become sleepless, gradually lose their strength, and finally die in a state of marasmus. Pyelo-nephritis may occur as one of the final complications. It may be manifested by pain in the region of the kidneys and the painful discharge of fetid and purulent urine. The following conditions may give rise to error in diagnosticating vesical calculus.

1. *Phimosis.* — This condition causes pain, difficulty in urination (which will vary with the length of the prepuce and the narrowness of the meatus), tenesmus, and even prolapse of the anus, the latter accident being due to straining efforts to expel the urine which collects within and distends the cavity of the prepuce.

2. *Congenital atresia of the meatus.*—This condition may be readily discovered by inspection.

3. Foreign bodies introduced into the urethra might readily give rise to the symptoms which accompany the presence of calculus. Such bodies may become foci for the formation of calculi.

4. Cystitis may also give rise to the symptoms of calculus, and the differential diagnosis may be extremely difficult. An

exploration of the bladder and rectum may be required to establish the diagnosis. Guyon recommends that such cases be treated, for a long period, with daily doses of one or two grammes of chlorate of potash. A few centigrammes of iodoform may also be used daily with advantage. To relieve the pain and tenesmus, hyoscyamine and the hydrobromate of cicutine in combination may be given. The benzoates and hippurates may be given to relieve the inflamed mucous membrane. A. F. C.

Jacubowitsch: Diagnosis and Treatment of Congenital Atresia of the Anus and Rectum in New-Born Infants. (*Rev. Mens. des Mal. de l'Enf.* [*Jahrb. f. K.*, vii., 6, 1886], September, 1887.)

According to Bodenhamer, the principal varieties of this condition are—

1. A contracted condition of the anus at its orifice.
2. Such an arrangement of the membranes of the organ in folds that the sphincter ani is deformed.
3. The anus and rectum may be well developed, but the anal orifice is closed by a membrane which is sometimes thin, at others thick and resisting.
4. Absence of the anus. The scrotal raphe is continued as far as the coccyx. The rectum may also be entirely absent.
5. An abnormal orifice which fills the functions of the anus and occupies its place. The rectum and colon may be wholly or entirely wanting.
6. The rectum terminating in a cul-de-sac more or less remote from the perineum. The walls of the cul-de-sac firmly fixed to the surrounding tissues. No trace of an anal orifice.
7. The rectum separated from the anus, which is regularly formed by a more or less thick circular band. The lumen of the anus of normal calibre.
8. The anus normal. The anal extremity of the rectum transformed into a fibrous cord, which in some cases is terminated by a kind of sac.
9. The anus and the contiguous portion of the rectum presenting a normal formation. Higher up the walls of the rectum united for a greater or less extent, the rectum being thus completely obliterated.
10. The entire lumen of the rectum occupied by a fibrous new formation. The anus absent.
11. The rectum terminating in the bladder, the urethra, the vagina, the uterus, or, in a cloaca, the exploring finger sometimes finds an imperfect anal orifice, which admits it for a distance of several lines, but a well-formed anus never found.

12. The rectum opening by an abnormal orifice into the sacral region. This abnormal orifice prolonged into a fistulous canal, which may open into the perineum, the penis, the labium majus, etc. A normal and well-formed anus is never seen in such cases.

13. The colon terminating in a cul-de-sac, which in some cases is free in the cavity of the pelvis or in the abdomen; in others is attached to the walls by fibrous bands. The place which should be occupied by the rectum filled with cellular tissue.

14. Neither anus nor colon. In such cases there may be an abnormal anus situated in some portion of the body, and establishing communication with the cæcum, or large intestine.

15. Malformation of the anus or rectum complicated with a deformity of some other character, whether a scrotal fissure, a spina bifida, or imperfect development of the extremities, etc.

Even this enumeration does not exhaust the list of possible malformations of the anus and rectum, in the author's opinion. Six cases are narrated in which different varieties of deformity were found. Death occurred in three of them. Suggestions are made which are intended to be of service in diagnosticating these conditions. Of thirteen colotomies which have been reported by the method of Littrè, nine were successful. Of ten colotomies by Callisen's method, only three recovered. The operation of Littrè is thought to be easier of execution, and also safer, than that of Callisen. A. F. C.

Treatment of Pseudarthrosis in Children. (*Le Concours Méd.* [Editorial], January 29, 1887.)

A girl, sixteen years old, came to Verneuil's service with a pseudarthrosis in the lower third of the left leg. The leg had been fractured in early childhood, consolidation had not taken place, and the most cleverly devised orthopædic apparatuses had failed to effect firm union of the fragments. The leg showed remarkable changes of nutrition in its entire length; its length was ten centimetres less than that of its fellow, the fatty tissue had greatly increased, the articulation was inactive, and each winter there were numerous ulcerations, which testified to the bad condition of the nutrition. The bony extremities in the vicinity of the pseudarthrosis terminated in a point, and were joined to each other by a bridge of fibrous tissue four or five centimetres long. All the facts in the case induced Verneuil to amputate the leg above the false joint, and the operation was followed by complete recovery. Nepveu, who reported the case to the Surgical Society (Paris), found eleven similar or analogous cases in the literature of the subject. Their analysis showed that, however successful the methods of treating false joints in adults might be, they were all ineffective in children. In fact, non-consolidation, after the fracture of a limb in a child, leads inevitably to degenerative lesions, not only in the bone itself, but also in the soft parts. The perfect continuity of the bones is essential, in children, to the nutritive equilibrium of the member. In all the recorded cases neither irritation of the ends of the fragments nor setons have done any good; resection, after Volkmann's method, in four recorded cases, has been equally futile. Amputation of the limb above the lesion is, therefore, the only logical method to be followed when a false joint results from a fracture of the limb of a child. A. F. C.

Zagonet: Curability of Infantile Tetanus. (*Rev. Mens. des. Mal. de l'Enf.* [*Cron. Med.-quir. de la Habana*], December, 1886.)

After analyzing the opinions of Poncet, West, and Trunk, with respect to the pathogeny of this disease, the author concludes that it is one which is peculiar to childhood. As to its etiology, great importance is attached to moisture and cold, and to sudden oscillations of temperature. The use of a milk diet is particularly insisted upon as a means of treatment. If the condition of the patient is such that milk cannot be given by the mouth, a tube should be introduced into the nostril, through which nutriment can be conveyed to the stomach. Vapor baths, lasting ten to twenty minutes, may be given every twelve hours. Injections of sedative substances may also be made into those muscles which are the most violently convulsed, while by the mouth ten or twelve centigrammes of chloral may be given every hour. Auchanteles, Monti, and Huttenbrenner report six cures by this method of treatment. Hypodermic injections of eserine may also be made, and repeated every fifteen minutes until the convulsions cease. One centigramme of eserine may be used with each injection. Emetics and purgatives are also indicated in some cases, but they are apt to be abused. Opium, morphine, cannabis indica, and Calabar bean are agents which are made use of from time to time, sometimes with good results and sometimes with none. The same may be said of the use of fomentations with narcotic substances. Cups and leeches have also been used along the spine, upon the theory that the disease is a myelitis. The author insists that the common opinion that the disease is necessarily fatal is an erroneous one. On the contrary, the recorded cases of cure are relatively numerous. A. F. C.

Gross (Nancy): The Sub-Pubic Section in Children. (*Le Concours Méd.*, November 13, 1886.)

A little girl had introduced a hair-pin into her bladder, and the author being unable to remove it *per urethram*, performed the supra-pubic section, sutured the bladder, and obtained a rapid recovery. This experience suggested his paper, which sets forth the advantages of this operation during childhood. The anatomical conditions are entirely favorable; for, on the one hand, the bladder has an elongated form until the fourteenth or fifteenth year, and, in addition, the peritoneal cul-de-sac is so high that it need not be interfered with. In a child three years of age the fundus of the bladder is three centimetres above the pubes; at the tenth or eleventh year it is still a finger's breadth above it. Previous to the tenth year of life, therefore, if the bladder is full, the bottom of the peritoneal cul-de-sac will be thirty or forty millimetres away from the pubes. The balloon of Petersen may, therefore, be dispensed with in children, though its use offers some advantages which are not to be overlooked. In the records of three hundred and seven cases in which the supra-pubic section has been done upon children, the author found a mortality of twenty-one per cent. After the bladder has been opened in children it is difficult to obtain immobility, which is required for drainage of the bladder, hence the necessity of suturing the organ. This process is further justified by the fact that the urine of young children is not very irritating. Of forty cases in which the bladder of children has been sutured, only two deaths have been recorded. Interrupted sutures of silk are recommended. A sound should not be retained in the bladder, and its distension may be prevented by frequent use of the catheter. A. F. C.

Allchin: Intussusception. (*Lancet*, March 26, 1887.)

A specimen was exhibited to the Medical Society of London, removed from a male infant six months of age. The tumor was the size of a sausage.

The jejunum was drawn down so as to be close to the intussusception, which had descended into the rectum. There was a second duplication of the colon, probably secondary to the primary intussusception.

Parker: Suppression of Urine following Injury to a Sacculated Kidney, the opposite Organ being entirely Disorganized. (*Lancet*, March 26, 1887.)

A boy of thirteen fell over some steps and struck his right loin; passed blood *per urethram* afterwards quite freely.

Vomiting and pain were present, but subsided in a week's time. Brought to the hospital three weeks afterwards; still passing some blood with his urine, but examination failed to detect anything wrong with the kidney.

Two months later he was found to have a large lumbar swelling on the right side, which was diagnosticated to be traumatic hydronephrosis. It was tapped, and finally incised, as it refilled rapidly. Uræmic symptoms developed, and death followed four days later. The autopsy showed the *left* kidney converted into a mere sac, quite disorganized; one large and several smaller calculi were found in the sac.

The right (injured) kidney was greatly hypertrophied; calices dilated; in one of which a large calculus was found, and in others smaller ones. Plugging by these had produced the tumor of hydronephrosis.

West: Internal Suppuration without Fever. (*Brit. Med. Jour.*, April 2, 1887.)

Among a number of rare cases illustrating this point, reported in a paper before the Clinical Society of London, are the following ones occurring in children:

1. *Suppurative pericarditis.*—Boy aged sixteen; pericardium twice tapped and laid open; complete recovery; temperature neither before nor after the operation was raised above the normal.

2. *Suppurative peritonitis.*—Girl aged ten. The case was very acute; abdomen opened and fetid pus evacuated; patient did not rally after operation. Autopsy showed a primary peritonitis. The temperature throughout the disease was never elevated.

3. *Empyema.*—Boy of thirteen. Case tapped twice, and twenty-four ounces removed; afterwards ten ounces; then chest opened freely; recovery. No elevation of temperature at any time.

In the last case the pus formed very rapidly. Collapse was absent in all the cases.

Dr. C. Turner said in the discussion that it was not the pus, but some germs in it, which caused the fever.

Hutton: Mediastinal Sarcoma in a Boy of Eight Years. (*Brit. Med. Jour.*, April 2, 1887.)

The specimen was exhibited at the Manchester Medical Society.

Eight weeks before death paroxysmal dyspnœa, mainly expiratory, came on. The growth invaded the lungs along the bronchi, infiltrated the pericardium and the upper part of the auricles, as well as involving the glands in the neighborhood.

Freeman: Fistulous Communication between Trachea and Œsophagus from Pressure of a Silver Tracheotomy Tube. (*Brit. Med. Jour.*, April 2, 1887.)

The operation was done on a child two and a half years old for a scald of the glottis. The perforation occurred on the eighth day. Death took place six weeks after this.

The autopsy showed a vertical slit about the size of a shirt-button-hole, through which the healthy mucous membrane was continuous from the trachea to the œsophagus, opposite the end of the tube.

Pughe: Occlusion of the Rectum—Littrè's Operation done Successfully—Death from Peritonitis Four Months Later—Autopsy. (*Liverpool Medico-Chirurgical Journal*, January, 1887.)

The patient was admitted when four days old; a healthy-looking child; abdomen distended; anus patent, but rectum so only for an inch above it.

Littrè's operation of ileo-colotomy was done, and a large quantity of meconium evacuated. The child did very well afterwards, except that there existed a tendency to prolapse on the part of the lower portion of the bowel, none of the upper part.

Later an ischio-rectal abscess formed, and death followed from peritonitis.

The autopsy showed the opening into the colon contracted, that downward somewhat dilated. The rectum terminated in a cul-de-sac filled with meconium. This pouch was about one and one-half inches above the septum, felt per anum. The gut between these points was represented by a fibrous cord. There was considerable pelvic peritonitis, and the irritation of the meconium left in the cul-de-sac was the probable cause of the ischio-rectal abscess. The prolapse of the rectum into the wound seemed to be an effort of the intestine to empty itself of its contents.

Pughe: An Aggravated Case of Equino-Varus, cured by Tarsal Oste-Ectomy. (*Liverpool Medico-Chirurgical Journal*, July, 1886.)

The patient, a girl of eleven years, was admitted with an extreme degree of deformity. The following operation was done: Having divided the Achilles and tibial tendons, an incision was made over the projecting head of the astragalus, from the ankle-joint directly down the outer side of the foot, to within half an inch of the plantar surface. Another incision was continued forward from the lower end of this for three-quarters of an inch. The whole of the astragalus in front of the joint was now removed with the chisel, and the whole of the cuboid in like manner. The inversion of the foot could now be corrected. The scaphoid was the only obstacle to restoring the foot to its normal position. This bone was from its long malposition now wedge-shaped, and was removed entire. The wound healed without suppuration, and a good position of the foot was secured. In three months the girl was walking about with an ordinary slipper, and there was no tendency to a recurrence of the deformity; although the foot was considerably shortened, it was, for practical use, nearly perfect.

This is the eighth similar case upon which the writer had done the operation, with very satisfactory results in all. In none was there any tendency to relapse. The chief obstacle to the reduction of the deformity in all cases is the unnatural prominence of the head of the astragalus. This bone, in the state of extension, is partly extended from the ankle-joint, and the tibia rests only on its posterior articular surface.

The following papers have been promised for the Section on Diseases of Children for the next meeting of the American Medical Association, to be held in Chicago, June 7 to 10:

1. "Epidermic and Hypodermic Medication of Infants." By J. A. Larabee, M.D., Louisville, Ky.
2. "Scarlet Fever." By Prof. I. N. Love, M.D., St. Louis, Mo.
3. "Aphasia in Children." By S. B. Sperry, M.D., Delafield, Wis.
4. "New Method of Treating Congenital Phimosis." By Prof. W. S. Stewart, M.D., Philadelphia, Pa.
5. "Diphtheria." By H. Landis Getz, M.D., Marshalltown, Iowa.

The following gentlemen have promised papers, but have not sent title:

J. M. Dunham, M.D., Columbus, Ohio.
Prof. Henry Jameson, M.D., Indianapolis, Ind.
Prof. W. D. Haggard, M.D., Nashville, Tenn.
Prof. J. V. Shoemaker, M.D., Philadelphia, Pa.

W. B. LAWRENCE, M.D., *Secretary.*

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Original Communications.

THE RHEUMATIC ELEMENT IN THE CHOREA OF EARLY CHILDHOOD.

BY OCTAVIUS STURGES, M.D., F.R.C.P.,
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IT can be shown by many illustrations that the study of children's diseases gives material aid to pathology by exhibiting the birth kindred of disorders which in their later development have little in common. And if this be true of childhood generally, it is especially true of that period which immediately follows infancy, when, with the first awakening to an external world, each day is bringing new experience, teaching fresh lessons, and widening the field of consciousness and of observation. That short, eventful interval between two years old and six or thereabouts, in witnessing the conversion of the sluggish, insensible infant to the sensitive, emotional child, the most active and restless of the race, exhibits the most rapid and profound series of changes that life affords. And accordingly its pathological, like its physiological, history is full of incident; many forms of diseases are, in fact, special to it, and none can be said to have been fully observed until traced back to its source in early childhood.

Considerations like these make it always matter of extreme interest when any morbid condition whatever that has a well-recognized name in nosology is met with, so to speak, in its cradle, at a time of life when we are not accustomed to see it. Such exceptional occurrence demands of every candid mind a re-reading of the pathology of the affection in question with a view to testing its validity under its new aspect. An opportunity of this sort has lately happened to me in the case of chorea. I have endeavored to deal with it in the spirit I mention; and in so doing have reached conclusions which, to me at least, are new and surprising. What those conclusions are, on what evidence they are based, and by what hypothesis they may possibly be explained, shall now be stated with as much brevity as is possible and with careful separation of fact from theory.

In November, 1886, I had the good fortune to secure under my charge at the Hospital for Sick Children, Great Ormond Street, a child suffering from chorea at an unusually early age for that disorder. The following is an abstract from the very careful notes of Dr. Penrose, Medical Registrar:

Mabel J., aged three years and six months, a well-nourished, intelligent child, born at full time, and suckled fourteen months, was admitted, November 15, owing to "loss of use of hands and speech," when the following history was obtained from the mother: The patient was one of four, two of whom had died in infancy of convulsions. She had been always delicate and subject to bronchitis, but had had no definite illness, except chicken-pox when a year old. Three weeks ago she was noticed to be feverish, complained of abdominal pain, and had spat up some green, blood-streaked mucus. A week before admission she "fainted," and the mouth and hands began to twitch, especially on the right side. These movements daily increased, and were shortly followed by thickness and difficulty of speech. There had been no delirium, nor squint, nor discharge from either ear. The motions had been slimy and blood-streaked for three months, and thread-worms had been passed. The night before the attack mentioned above the child had been frightened by a quarrel between her parents.

In the family history the most significant fact was that the mother had had fits in her childhood (from nine to sixteen) in which she would bite her tongue. There was no rheumatic or mental disease on either side, and the father was a strong, healthy, laboring man.

On admission, the child is found to have slight choreic movement of right hand and arm, with imperfect control of right leg, so that she reels to that side in walking. When raising herself from the recumbent position she makes no use of the right side, and with difficulty manages to pick up a piece of paper with the right hand. A loud systolic murmur is heard just outside the nipple, conducted round axilla, and with feeble thrill. Occasional rhonchi are audible over both lungs, and there is deficient resonance anteriorly over right chest from second to fourth rib, with bronchial breathing. Temperature at this time normal; pulse 124, uneven; the child cheerful and without conscious dyspnœa. The optic disks appear normal.

In the progress of the case the choreic movements increased somewhat, and were found to concern the left hand as well as the right, though in less degree, the legs being almost quiet. On the second week of admission a slight graze, as of pericardial friction, was detected, but of this we cannot speak with certainty. The patient was at this time (November 24) bright and happy, with intelligence beyond her years.

On the 8th of December, three weeks, that is, after admission, the patient in the interval having almost lost all sign of chorea, the back of the right hand was observed to be swollen and painful. Moreover, a nodule was found in the inner side of right olecranon. The child was sweating as to its palms and soles, but as yet there was no rise of temperature. The tongue furred, white, and dry. The second sound of the heart was now reduplicated, the systolic murmur loud and rough, and the cardiac action exerted and uneven. The following day the left wrist was also painful, and on the 17th of December a second nodule appeared on the left elbow.

Four days after this last note, namely, December 21, fever set in (103.6°) and the child was repeatedly sick. Respirations were over 40; pulse, 140–160. Some albumen, with epithelial and hyaline casts and red disks, was present in the urine. (These latter signs, together with some redness of the knees and the appearance on the night of the 21st of a blotchy rash, which disappeared by the morning, gave rise to the suspicion of scarlatina; but the rash was not characteristic, nor was it followed by desquamation.) From this time to death the decline was rapid, vomiting persisted, there was slight œdema of feet, pulse, slowed to 40, was of very high tension and irregular. Evening pyrexia 100°–102°. Latterly the child had recurring fits, especially when touched, but on ophthalmic examination nothing abnormal was found in either fundus.

Clicking râles were now audible with both inspiration and expiration. The heart's area was increased, its apex-beat still in the fourth space. Two days before death, more dulness, with deficient respiration, having been found in the right infra-axillary region, aspiration was made, and five and one-half ounces of slightly-turbid fluid withdrawn. When last examined the urine contained a tenth albumen and a few epithelial casts. The child died in convulsion.

No post-mortem examination could be obtained.

Imperfect as is the above account, owing to the absence of post-mortem examination, its main features are sufficiently definite. These concern, first, the tender age of the child; second, the intimate and, indeed, inextricable association of chorea with rheumatism. As regards the first point, it will be admitted that chorea seldom occurs under six years of age, and is very uncommon between three and four. Searching the records of our Hospital for Sick Children, I can find but two examples to match with the one just quoted,—a boy and a girl, one three years and seven months, the other three years and nine months; both, therefore, senior to the child in question. Moreover, taking one hundred and seventy-seven cases of chorea* which have been under my own observation, only seven—one boy and six girls—were under six; while of seventy-one cases recorded by Dr. Dickinson,† only three—two boys and one girl—are under six. Thus we have but ten examples of chorea occurring in children under six out of a total of two hundred and forty-eight.

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* "Chorea and other Allied Movement Disorders of Early Life. Appendix B." In the course of this paper it will be necessary, as I foresee, to refer now and again to my own work. The reader must not, thence, infer that I claim any sort of authority; the sole object of the reference is by way of apology for certain statements which for brevity's sake are here introduced without proof or evidence, but which are discussed at length in that book.

† Med.-Chir. Trans., vol. ix., Pathology of Chorea.

If to these numbers be added Dr. Pye Smith's record of one hundred and fifty cases of the same disorder,* these furnish but three patients—two boys and a girl—under six. So that the grand total of three hundred and ninety-eight gives but thirteen under six years old,—five boys and eight girls. Of these thirteen, two children of Dr. Pye Smith's list are under three years old. They are the sole rivals in juvenility of Mabel J., and of nearly four hundred examples. It may even be said that they outrival her in a degree which is itself suspicious, in the wide interval of time which is left void between these infants and the children next above them. There is a world of difference between the infant under three and the child more than six months older; and in the absence of further particulars it is legitimate to make question as to the real title of motor disorder in babies to be ranked as chorea.

However that may be, it is at least apparent that three years and six months is an unusually early age for chorea. On that account it is important to note that this child of ours, who thus exhibits, after mental disturbance, a nervous disorder which is, so to speak, beyond her years, was noticed to be more intelligent and observant than the run of children of the same age. It has been asserted that choreic patients, as a rule, are backward and stupid. The statement I believe to be inaccurate; at any rate we have here an example of the affection resulting from fright in a child unusually intelligent and unusually, almost unprecedentedly, young to be the subject of such an affection.

And what may be said of the chorea in this patient may be said also of the rheumatism which was so intimately connected with it. It is true that cardiac murmurs, assumed to be rheumatic, are met with in very young children; true, also, that mere babies exposed to cold will get transient joint-pain and stiffness, whether rheumatic or not. But unequivocal polyarthritis such as this child had, and with characteristic blush at the joints, pyrexia, nodules, endocarditis, is assuredly rare in very young children. In four hundred cases of rheumatism collected by Dr. Pye Smith,* only two were as young as five. None were under that age. M. Roger, with his vast experience of children and decided views as to the intimate union between rheumatism and chorea, has met with the former disease but once at three years old, and but once at two.

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* Guy's Hospital Reports, vol. xix., series iii.

In the practice of the Hospital for Sick Children during the last three years I have admitted into my ward (of twenty-one beds, boys and girls) eight children—three girls and five boys—under six classed as rheumatism, the youngest two years and eleven months, the four next youngest between three and four. In the ward of my colleague, Dr. Cheadle (for—the same number of beds—boys only), during three years and a half six cases of rheumatism were received, the youngest three years and seven months, the next youngest three years and nine months, the rest all over four and a half. In the third ward (for—the same number of beds—girls only) my colleague, Dr. Barlow, and his predecessor, Dr. Gee, admitted but two patients under four regarded as rheumatism in over four years. The youngest was two years and six months, the other three years and seven months. The five next youngest are all over four.

Taking the sum of admissions during the times specified (amounting in the aggregate to about three thousand five hundred patients), we get twenty-one children with rheumatism under five years of age. Beginning with the youngest and working upwards, age and sex are represented as follows:

The youngest of all is a girl two years and a half old; the next youngest is also a girl of two years and eleven months; the next is again a girl of three years and one month; then comes another girl three years and five months; and (probably) the first boy three years and six months. But here there occurs, unfortunately, a slight ambiguity, the age of our patient, a boy, being entered as "three," meaning, of course, *over* three, we cannot say by how much. He was but ten days a patient, and might possibly claim to stand fourth on the list, the three youngest being all girls.

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* Guy's Hospital Reports, loc. cit.

At any rate, taking the seven youngest subjects of rheumatism, all under four, we get five girls to two boys, while the only two under three years of age are both girls.*

It may be taken for granted, then, that the two affections here seen together, chorea and rheumatic polyarthritis (not to meddle just yet with mere joint-pain), are both of them rare at the age of our patient, namely, three years and six months, —so rare, indeed, that a single example of such combination cannot fail to suggest a real pathological affinity between the motor disturbance and the joint-inflammation. But in order to test fully the validity of this belief or suspicion it will be necessary to consider the circumstances of such children as have been mentioned above as examples of chorea occurring at an exceptionally early age. How is it with them in respect of rheumatism? What proportion are rheumatic, and of what nature is the relationship between the chorea and the rheumatism?

Now, of my one hundred and seventy-seven cases of chorea, already quoted, there are eight under six years old; all but one girls. One of these must be dismissed from the present inquiry,—a girl of four, whose friends were not interrogated in regard to rheumatism. Of the seven remaining, three certainly, and a fourth probably, had had rheumatism. Three were exempt. Of Dr. Dickinson's seventy-one cases, three only are under six, and in two of them chorea followed immediately after rheumatism. It thus appears that two hundred

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* These figures show curiously how the boys tail out as we approach infancy. They run thus:

	Boys.	Girls.
21 under six years	11	10
13 under five years	6	7
9 under four years.	4	5
5 under three and a half years	1	4
2 under three years	0	2

Senator, in his elaborate treatise on acute rheumatism (Ziemssen's Cyclopædia, vol. xvi. p. 17), states that "children under four are scarcely ever affected." As regards infant rheumatism, he quotes from Rauchfuss and Widerhofer numbers so vast as to be almost bewildering. Fifteen thousand babies (precise limit of age not stated) had but two examples of polyarthritis, the observation extending over four years. Seventy thousand, observed over twice that period, furnished but one.

and forty-eight children with chorea include eleven under six years old. One of these supplies no information on the point at issue. Five out of ten certainly, six out of ten probably, have had acute rheumatism. With such testimony it hardly needs the extra corroboration of our present case to drive home the conclusion that in young children the rheumatic element of chorea is conspicuous.

But the numerical statement does not adequately express the strength of this evidence. The intimacy of the relationship between the two affections has to be considered no less than the frequency of their joint occurrence in the same individual. The fact that a patient suffering with chorea has at some former period suffered with rheumatism, taken by itself in any particular instance, does not move us much. It proves nothing except that the one disease does not shut out the other, which no one ever supposed that it did. But a single example of chorea and rheumatism in such close union that the symptoms of the two affections are practically inseparable argues strongly in favor of a common pathogenesis. And such is habitually the nature of the relationship in these exceptionally young subjects. Thus, in my one hundred and seventy-seven cases, the youngest of the list, a girl between three and four (Annie P.), had redness and swelling of the feet and hands just before the chorea. Olive T., aged four, "had had rheumatic fever." Anne G.,* aged four years and six months, "had had rheumatism just before." Similarly, Dr. Dickinson's seventy-one cases, already referred to, include one girl, the youngest of his series, and between three and four. She had "general articular rheumatism just before her chorea." The next youngest are two boys, over five, one of whom had had "rheumatism immediately before." If we limit the age still further, excluding children over five years old, the statement will run thus: In my own list there are four under five (excluding the one without history), and three are in near connection with rheumatism. Dr. Dickinson has but a single case under five, and it is in immediate connection with rheumatism. So that, including our present example and limiting the observation to little children under five (beyond which limit, no doubt, the association in question becomes both less common and less intimate), we have five examples of chorea intimately blended with rheumatism in six cases; not a large number truly, yet the rare gleanings from a very ample field.

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* Loc. cit., p. 180. Appendix B. By a mistake the age of this last child is printed two years. The correct age is given above as entered in my case-book.

But we are still short of a just estimate of this connection until we have considered the individual symptoms of the two affections thus concurring in the same subject. It is here that we reach the most distinct and irrefragable tokens of a common parentage. No better illustration could be adduced than our patient Mabel. In her case the two elements—the rheumatic and the choreic—are so closely knit together that any attempt at separation might do violence to either. Chorea and rheumatism went hand in hand, but which of the two was foremost we cannot certainly tell. On the child's admission two symptoms were prominent,—the movement disorder of chorea and cardiac murmur. From the physical characters of the latter some might interpret it as dynamic, and some as evidence of endocarditis. As the case progressed, however, the auscultatory signs were clearly those of endocarditis. Now, if it be that the cardiac murmur was at first dynamic and afterwards, when intensified and conducted, became physical evidence of endocarditis, then chorea was ahead of the rheumatism.

But if it be taken otherwise and the physical signs indicated endocarditis from the first, then it follows that for more than three weeks this endocarditis has chorea for sole companion, and it is only on the point of departure of this latter that rheumatic arthritis makes its appearance. Upon either supposition the two affections are closely combined, and they share in common a valve-lesion which may be variously interpreted as the property of one or the other.

It is true, unfortunately, that this case of ours is incomplete, owing to our failure to obtain leave to examine the organs after death. Yet, in the later days of life, the physical signs were sufficiently pronounced to make it practically certain that the child had endocarditis, if not pericarditis. Nor is it to be forgotten that in the rare event of death by chorea in young children the condition of the heart-valves is, as a rule, hardly distinguishable from rheumatic endocarditis.* Add to this that cardiac disturbance is more frequent in the younger than in the older children, and there will appear, over and above the fact that young subjects frequently exhibit chorea and rheumatism together, the additional fact that each of these affections, taken separately, is in the habit at this tender age of affecting the heart after the same manner.

This intimate association of polyarthritis and chorea seems almost to justify the statement of the French physician, that the two affections are different manifestations of the same morbid condition. But let it not be forgotten that in all that has been now said we are considering one stage of life alone, the dawn of conscious existence, a period, that is, which furnishes but rare examples of either of the diseases in question. If chorea be regarded without reference to age, its connection with rheumatism is neither common nor intimate, and in adult life it is hardly perceptible.† The facts stand thus: in the after-infancy period of life, when rheumatism and chorea first emerge in recognizable shape, they appear in close association. Growth tends continually to weaken this connection, and eventually breaks it down altogether.

We have looked at this question so far from the point of view of chorea; let us now look at it for a little from the point of view of rheumatism. It is curious to notice that while the literature of chorea is much perplexed with questions about rheumatism, the literature of this latter disease hardly concerns itself with chorea. The reason is, no doubt, that the historians of rheumatic polyarthritis take as their model that period of life when the disorder is most typically expressed, with its high fever, swollen joints, acid sweat and urine, and such general stiffening of the limbs as tells its own tale at a glance. That period corresponds with early manhood or womanhood, an age which has little to do with chorea, although, unquestionably, rare and striking cases of that affection do occur now and again on the female side.

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* Chorea, p. 78. Of thirteen patients dying of chorea, nine have mitral vegetations and four have not.

† See Chorea, p. 198, etc.

Now, if we take rheumatic polyarthritis at this its most characteristic period, and working up the stream of time pass in succession youth, boyhood and girlhood, childhood, infancy, the more marked features of the disease continually fade until, as we near infancy, we reach those dubious and transitory forms of joint-pains which, unless the state of the heart interpret them, some reckon rheumatism and some not, thus rendering very precise estimate of rheumatic frequency in little children impossible. Observe, however, that the time of life when rheumatism is most distinct and characteristic is also the time when chorea is hardly seen. The rare cases that occur are almost confined to women, some are revivals of a childish chorea, some the direct result of nervous disturbance (as in pregnancy); very few exhibit recent heart-disease or are immediately connected with rheumatism. Thus, as life goes on and the full and completed features of rheumatism begin to stand out more and more distinctly, the choreic alliance is gradually thrown off, until at adolescence the two affections stand apart, each after its own likeness.

Thus, both in the early association and the later separateness, the behavior of the two affections is curiously contrasted. The one waxes as the other wanes. It is true that a cardial murmur may be the first and single symptom both of chorea and of rheumatism in young children, leaving us for a while in doubt as to which of these two affections will be paramount. But it is also true that the chorea of this age is more fully expressed than at any later time, for it is not a motor disorder only, as it afterwards becomes, but exhibits paresis as well. It is the precise reverse with the rheumatic element, the arthritis, which is the great characteristic of rheumatism in later life, being now habitually limited and ill-expressed. Contrast with this the chorea and the acute rheumatism of puberty. The one is a movement disorder of emotional young women, often of great violence, originating commonly in mental disturbance, without paresis, without heart-affection, and, as a common rule, at all events, without articular pains. The other is an acute inflammatory disease which implicates many joints at a time, as well as the heart, and with no emotional element. Its commonest cause is exposure, and commonest subjects sturdy day laborers. But at this point, if I mistake not, the reader will be prepared with objections. We have yet to consider the two affections in question in reference to their etiology, and here, at least, it will be urged, they are quite separate. The exciting cause of rheumatism, at whatever age, is exposure; that of chorea has nothing to do with exposure, except indirectly. That is one objection to the theory of a common pathogenesis. And there is another: upon my own assumption that rheumatism becomes more and more equivocal the nearer infancy is reached, we are forbidden to accept every case of chorea as being really rheumatic merely on the ground that some joint-pain attends it.

As regards the first point, namely, that rheumatism is always the result of chill, I might quote the child Mabel, the subject of my text. She had, as we have seen, chorea and rheumatism in close association, mental disturbance preceding both. Apart from prepossession, there is no warrant for ascribing the one affection any more than the other to any source except a nervous one. But let that pass. Acute rheumatism, no doubt, has its main cause in exposure, and obtains most in climates where the risk of exposure is the greatest. But as with other chill diseases, as with pneumonia, for example (with which I ventured to compare it years ago), chilling of the body is not the sole cause, even if it be in every instance a necessary factor in the production of rheumatic polyarthritis. Our common habit is to look for some evidence of exposure, and often, no doubt, we find it. But failing to find it we seek no further. There are no other avenues of inquiry as yet opened up by official sanction. Yet many years ago Corrigan called attention to the fact that fatigue has its share in the production of rheumatism. The patients, he observed, were often tired by laborious exertion, as well as heated and exposed. More recently Senator, in the treatise already quoted and with no after-thought (for he hardly mentions chorea), suggested that mental emotion might contribute to produce the disease, citing an instance of that sort in his own experience. Certainly it is not uncommon to find children with rheumatism where there is no history whatever of undue exposure.* Recent observation, indeed, together with the revival of opinions which are not altogether recent, has opened for us a new chapter in reference to the relationship of nervous disorders and polyarthritis, whether rheumatic or not. Hence the force of the objection does not lie so much in the fact that rheumatism is a chill disease, which chorea is not, for there is "a growing belief," as Dr. Weir Mitchell reminds us, "that rheumatism may have more forms than one." It is rather this: that in order to secure such intimate relationship between chorea and rheumatism in early childhood as I am contending for a certain proportion of cases have to be utilized when the chief evidence of rheumatic arthritis is derived from slight and fugitive joint-pains. With this decisive evidence we are able to adduce how examples of this dubious kind are not numerous enough to affect the question very materially; still, to avoid cavil, let the contention run thus. Chorea in young children is intimately associated with arthritis, rheumatic and other. Thus, generally stated, the effect of the proposition is but to add chorea to the number of nervous affections, structural and functional, which have been noticed of late years in connection with lesions of the joints.

It would be beyond the scope of the present paper to speak in any detail of the nervous diseases, functional and organic, associated with changes of nutrition in the joints. The subject presents itself under three headings: one the nerve injuries, whether of the cord or brain, which are followed by an inflammatory condition of the joints, indistinguishable from rheumatism; another, tabes dorsalis, with destructive arthritis, in what is known as Charcot's disease; a third, joint-inflammation simulating articular rheumatism, but not deforming or destructive, in company with some form of paralysis which is itself temporary and due to fatigue or exhaustion. "Any form of nerve-lesion," says Dr. Weir Mitchell, "the brain included, may develop in the joints inflammatory conditions, usually subacute, and which so precisely resemble rheumatic arthritis that no clinical skill can distinguish between them." Professor Charcot speaks in much the same sense, and alludes especially to the joint-affections of hemiplegic patients.

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* A month ago a girl of nine years and six months was under my charge with acute rheumatism, followed by chorea, for which no other cause could be assigned than the fatigue of a long walk, the knees being first complained of as painful and afterwards exhibiting arthritis.

To like purpose is the observation that recovering paralysis, the result of mere fatigue and over-exertion, may be accompanied by polyarthritis, indistinguishable from the rheumatic. In a case of the kind quoted by Sir William Gull,* a woman, aged thirty-nine, was thus affected in the larger joints after severe and unusual bodily exertion. She made a good recovery, and the narrator in commenting upon the facts writes: "Whatever the state of the cord, the paraplegia was clearly induced by fatigue, acting upon a delicate and anxious subject;" and he adds that Dr. Addison, his colleague, had "long drawn attention to the close connection between spinal lesions and true rheumatism," † so difficult is it to trace the exact parentage of pathological observations.

We have authority, therefore, for saying that lesions of the higher nerve-centres and of the cord are apt to exhibit arthritis indistinguishable from rheumatism; that such lesions are not always permanent or destructive, either as regards the joints or the nerve-centres; and that among other causes of this conjoint affection may be reckoned fatigue, emotion, and anxiety. And here it seems obvious to include a familiar form of arthralgiæ occurring in hysterical women. Apart from any near resemblance of articular rheumatism, it can be by no mere accidental coincidence that we observe, from time to time, both in chorea and hysteria a sudden onset of acute joint-pain in knee or wrist, which after lasting, say for a night, and causing active complaint and distress, will vanish altogether by the morning.*

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* Guy's Hospital Reports, third series, vol. iv., 1858.

† It is curious to remember that Dr. Copeland many years ago claimed to have discovered a similar relationship between "inflammation of the membranes of the cord" and chorea; the cord-affection arising from "metastasis of the rheumatism" from joints to spine, "disturbing the function of the nerves issuing from the affected part" (Copeland's Dictionary, article Chorea). A little later, when metastasis was less regarded and embolism rose into favor, we find chorea, ever at the service of the reigning pathology, laid under contribution to furnish illustrations of that occurrence in the brain.

Observations of this sort, ample as they seem in proof of a near sympathy between nerve-lesions and arthritis or arthralgia, are unfortunately the reverse of precise as regards the locality or nature of the nerve-injury. Some recent authors have been bold enough to pursue the subject further by the aid of argument and hypothesis, which I do not venture to follow. Prominent among these is Professor Latham, of Cambridge, who, in his learned and original Croonian Lectures, delivered last year at the College of Physicians, supposes as the immediate cause of chorea "exhaustion or weakening of vaso-motor fibres proceeding from the upper cervical ganglion to form the carotid plexus," due to prolonged stimulation; and as a result of such exhaustion, "vascular dilatation and circumvascular change in the track of the middle cerebral artery."†

Such morbid change, as the author points out, would be precisely similar to that described and figured by Dr. Dickinson as the anatomical expression, so far as the brain is concerned, of chorea, diabetes, and disseminated sclerosis.‡ It is added that "*so far as the nerve-cells* are concerned" (the italics are the professor's), "the same result would be produced as ensues from embolism. Their co-ordinating action would be paralyzed, and such changes would produce the inco-ordinated movements of chorea."

Of such explanation I would only say that it is not helped much by the comparison with the results of embolism. The embolic theory of chorea, put to trial both by dissection and experiment,§ no longer survives, and no one has done more to demolish it than Dr. Dickinson.

There is another hypothesis (for it is no more, as the author is careful to explain) put forth by Dr. Buzzard as the interest of the gastric crises occurring together with joint- and bone-affections in locomotor ataxia, the hypothesis, namely, that there is "a trophic centre for the osseous and articulatory system in immediate neighborhood of the roots of the vagi."* The supposition is one which we must either take or leave in its fullest application. And, while admitting its inherent probability, the hypothesis is not one to be greatly furthered by means of chorea, an affection which is apyrexial, and wherein, notwithstanding that its subjects are children, gastric disturbance is conspicuous by its absence.

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* Chorea, p. 186.

† On Some Points in the Pathology of Rheumatism, Gout, and Diabetes, by Dr. P. W. Latham, p. 82.

‡ Med.-Chir. Trans., loc. cit.

§ See Dr. Angel Money, Brit. Med. Jour., 1886, "The Experimental Production of Chorea."

Leaving such speculations, I would, in conclusion, rehearse the general inferences to which the facts tend, and attempt to reconcile them with recognized pathological laws. To recapitulate, the rheumatic element in chorea, it would seem, varies considerably at the several stages of childhood. It is conspicuous at the very first; apparent in the older children; discernible yet infrequent in adolescence. Moreover, this earliest period, during which the concurrence of the two affections is frequent and intimate, is also the period when rheumatism itself is often an equivocal and indefinite disease, being expressed mainly by such cardiac signs as it shares in common with chorea, rather than by the articular inflammation which characterizes it in young adult life.

This full development of acute rheumatic polyarthritis as a widespread and enduring inflammation involving many joints at a time, is the signal that the time has come for the decline of chorea, both as to frequency and as to its cardiac and paresis symptoms. What hypothesis is to be set up? to what law of nature should we appeal to explain this age variation? Whatever the hypothesis, let the facts be kept clear of the theories. What has been said claims to be based on clinical observation. What remains will be speculative comment and may altogether miss the mark. I would carefully separate the one from the other.

Let it be granted that the relationship between nervous lesions, both functional and organic, and arthritis or arthralgia, is sufficiently established by many illustrations, of which chorea in its association with rheumatism supplies one. The observation is as yet incapable of anatomical expression. Yet, while accepting it as a reality, we may possibly by interrogating the facts a little further reach some reasonable hypothesis to explain, in the case of chorea and rheumatism, why this connection is intimate at the first, feebler in later childhood, and hardly recognizable in adult life. I submit that an examination of the pathology of early life in its successive stages of development, up to the period when neither chorea nor acute rheumatism survives, gives the key to these variations.

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* See Buzzard, Diseases of the Nervous System, p. 266, etc.

Observe that chorea and rheumatic arthritis, whether in union or apart, are first discernible at a period of life which though past infancy is yet near enough to that age to retain some of its characteristics. Now, in infancy morbid phenomena are the most generalized, and concern mainly the nervous system, the excitability of whose reflex centres is excessive. At this age impressions of the most various kinds, whether central or peripheral, have a common issue in convulsion,—convulsion which if not general is so variously and capriciously bestowed that the part selected for spasm gives but little guide to the source of it. Even when infancy has passed, and convulsion begins to limit its area, there is still a remarkable indifference and changefulness in its modes of display. Thus, with a young child spasm of the larynx will very readily pass to the diaphragm, so that there shall be stridor or laryngismus one day or one hour and dyspnœa the next. And speaking generally, many central lesions—cerebral hemorrhage, tumor, embolism—which in after-life give definite notice of their seat by means of the particular muscles they affect, are in early childhood so confused together that any attempt at localization would be futile. The nervous function is as yet imperfectly differentiated; it is unable to appreciate various sources and modes of irritation, or to separate them one from the other. And so long as this process of differentiation remains incomplete we should expect (as we find) that those morbid phenomena which, as there is independent reason for believing, have a real kindred—depending, so to say, upon the stimulation of neighboring centres—should for the while be merged and confused together. But growth and use have a constant tendency to draw them apart. Differentiation becomes more accurate, while at the same time external and accidental circumstances impart their own bias in this direction or in that.

Let me make my meaning plain by an illustration. Take any of the examples that have been already quoted of young children exhibiting side by side chorea and rheumatic arthritis. In these we have a group of symptoms, motor, cardiac, articular, signals in common of some nervous disturbance. Here, no doubt, are the elements out of which in later life we construct two diseases. But at present they are not two, but one. And by their appearance at this exceptionally early period of life they prove a special liability on the part of their subject both to chorea and to rheumatic arthritis. Now, there are in the world choreic inducements and rheumatic inducements, and there are epochs of life which are favorable now to the development of the one disease now to the other. And so in life's progress it will depend very much upon accident whether the child supposed shall develop chorea or rheumatism. She is ready for both, yet with a varying preference which is determined mainly by age. But this comparative indifference is of short duration. Let a child be encountered with consequent rheumatism, or a sudden alarm with consequent chorea, and either of these disorders will impress its own likeness and impart a proneness to repetition. But it is not the cause alone that has to be considered, there is the season of life as well. Chorea, for reasons that need not now be discussed, is a child's liability, favoring the female sex. Rheumatism is a young adult liability, with no marked sex preference except (as has been shown) in early childhood. We see, therefore, in that later period of childhood when the two diseases have, so to speak, joint reign, the one or the other occurring by preference according as accident has determined the character of the early attacks, while still the liability to suffer in either way is not yet at one end. Up to a certain age fright or nervous excitement may cause chorea in a rheumatic subject, or exposure rheumatism in a choreic subject. But soon this double liability ceases. That time of life comes when the reign of chorea is feeble and nearing its end, while rheumatism takes wider expansion and becomes endowed with many prominent characteristics which have been hitherto absent.

But it is needless to pursue the subject further. My main design, indeed, is not to discuss theories, but to call attention to facts which have only now become known to me. Looking at chorea as a whole, I have always sided with those who maintain that its relationship to rheumatism is often exaggerated, and that the manner of the association in certain instances is far more striking than its frequency upon the whole. That is my contention still; but, as I now perceive, it is incomplete. A full examination of the question, from the point of view selected in the present paper, compels the further conclusion that chorea and polyarthritis in their pathogenesis are nearly akin, while at the same time, as I venture to think, it suggests the reason why these two affections, although cradling together, should have but a short-lived intimacy, as well as the nature of the agency which soon begins to relax the bond of union and at length altogether dissolves it.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,
AND
WILLIAM A. EDWARDS, M.D.

(Continued from April Number.)

THE TREATMENT OF ENDO- AND PERICARDITIS.

As primary endocarditis is of extreme rarity, the treatment of endocardial inflammation is mainly that of the disease with which it is intercurrent. As we have already noted, it is prone to occur as an accompaniment of rheumatism, scarlatina, nephritis, measles, variola, varioloid, erysipelas, diphtheria, and typhoid fever; it has arisen during the course of coxalgia, or in those subject to the diatheses; its association with chorea and erythema nodosum has also already been noted.

In the first-mentioned affection endocarditis may appear

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early in the case and be the sole manifestation of the rheumatic disease; or, on the other hand, it may be the first local manifestation of a general rheumatic outbreak that in a few days will involve the joints. Cases of endocarditis should be placed at perfect rest: all excitement of any kind whatever is contraindicated. There should be but little bright light admitted to the child's room, nor should conversation be indulged in about the little patient's bedside. Cool acidulated drinks will be gratifying to the patient and will assist in reducing temperature, as lemonade sweetened with glycerin, or neutral mixture. Locally, the præcordia may be irritated by iodine in the following combination:

℞ Tr. iodin , ʒiii;
Spts. chloroformi, ʒi;
Tr. aconit. rad., gtt. xxv. M.
Apply with a brush twice daily.

This mixture will not cause pain by its application and will not be so likely to strip off the epidermis early in the case. The application of tr. iodine alone to the delicate skin of a child will cause undue irritation and make the child very restless, thus exciting cardiac action.

In older children a blister may be applied as large as the præcordial surface. To this raw surface Bouillard has applied daily forty to sixty centigrammes of powdered leaves of digitalis, the irritant action of which maintained the vesicant action. We would, however, sound a word of caution in this method of administering digitalis, as we have noted alarming symptoms from the absorption of digitalis by the skin.

In the rheumatic cases much benefit may be derived from salicylic acid, given as the salicylate of soda, lithia, or quinine. Some authorities administer large doses of nitrate of potash or tartrate of soda and the sulphate of quinine.

The salicylates may be pushed if they appear to act favorably upon the rheumatism and if the cardiac action is not extremely irregular, agitated, or intermittent, and if the pulse is regular and not too frequent.

Digitalis may be exhibited as the tincture in six- to eight-drop doses three times a day for a child of five years, the dose being gradually and cautiously increased as needed or decreased if necessary, as when its effect has once been secured we can maintain the impression with much smaller doses. It must be borne in mind that digitalis is not one of the quickly acting cardiac stimulants, an opinion that our intimate association with students and young practitioners has taught us is very prevalent. In many cases we much prefer the infusion of digitalis flavored with cardamom, in drachm doses.

We have never derived any appreciable benefit from convallaria in any way whatever, and, indeed, it seems to us that the drug merits no place in our consideration.

Veratrum and aconite are to be administered only with the extremest care, and are then to be carefully and intelligently watched. Opium, if given at all, must be in small doses, and is also to be watched most carefully, especially should there be any tendency to cyanosis. Bromide of potassium has been of service in our hands in quieting the patient and allowing the heart an opportunity of establishing its equilibrium. If the cardiac muscle is weakened, possibly the sodium salt would be the better drug. We consider that under no circumstances would it be justifiable to administer chloral.

Upon the whole, the most benefit will probably be derived by an early supersaturation of the blood by the alkalies. The ordinary fever mixture of spts. ætheris nit. and liq. ammoniæ acetatis is alkaline and sedative.

During convalescence great care is to be exercised, as in all probability permanent injury to the valves has been the result of the acute process. A well-selected dietary is to be advised, —one that will be nutritious, but will not demand undue exertion of the gastro-intestinal tract or the large abdominal glands in its assimilation, and above all else will not cause flatulent distention of the stomach and reflexly irritate the heart. This subject has been fully elaborated by one of us in a recent publication.*

The importance of guarding against the evil effects of high temperature merits our serious consideration. The diseases during the course of which endo- and pericardial inflammations are usually associated are apt to have exceedingly high temperatures, such as rheumatism, pleuro-pneumonia, pyæmia, etc., and the question often arises what effect the treatment such as is in vogue will have upon the cardiac condition. The treatment is usually cool bath, cold sponging, with pack, or evaporation by surrounding the child with a moistened sheet. In judging of this the strength of the heart and the freedom of the circulation have to be taken into consideration, and the activity and character of the treatment arranged accordingly. For instance, in a case of pleuro-pneumonia, if the heart be implicated and weakened, a cold douche or sudden shock should be most certainly avoided. In cases of recurrent rheumatic endocarditis engrafted upon some old valvular lesion the sudden shock might fatally affect a weakened heart, and cardiac paralysis from over-distention or visceral congestion be the result. In no case should a persistent temperature of over 104° be permitted; it is not the question of the necessity of the reduction to which we call attention, but to the method by which it must be accomplished.

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* "Maternity, Infancy, and Childhood." J. B. Lippincott Company.

We do not, however, at all advocate the indiscriminate knocking down of temperature simply because the condition of hyperpyrexia is present, a custom that to-day appears to be too much in vogue. First we should endeavor to determine the cause and effect of the high temperature. It would be no more rational to exhibit antipyretics or a cold pack to reduce a high temperature without first ascertaining its cause and endeavoring to remove it than it would be to treat any disease by a name; for example, the administration of digitalis in "heart-disease" without first determining the lesion and the condition of the cardiac cavities.

It is well, then, to first use the milder means before we resort to the more heroic measures, now so much the fashion.

The simple fever mixture already referred to in combination with drop-doses of aconite, say every four hours for a child aged five, together with iced lemon-juice and the carbonated waters, will frequently accomplish our object. We may sponge the extremities with cool water containing an evaporating volatile substance, as vinegar or alcohol; should the thermometer again show a registration 104°, or above, the cautious application of ice-cloths to the head and the nape of the neck would be justifiable, or even an ice-cap in children above twelve years of age. Quinine in suppository may be administered as the temperature begins to fall. If, however, the temperature should persistently remain high and show its well-known effects upon the heart and circulation, then we may exhibit either antifebrin, antipyrin, or thallin.

The former is probably the most reliable, its action usually being well marked within an hour after administration. The dose for a child of five years may be from three to six grains, repeated several times during the twenty-four hours if necessary. As the temperature falls the pulse will be reduced in frequency. In some cases slight cyanosis may supervene. Sweating is almost always present, and in some cases may be exhausting or even alarming. Atropine has but little if any effect in controlling this ephidrosis. An increased amount of urine will usually be voided following the administration of the drug. Antifebrin may occasionally cause vomiting, although it is not so likely to as either thallin or antipyrin. Rarely will the patient complain of chilliness, which we sometimes note after the administration of the two latter.

Iron and arsenic can with great propriety be administered during this convalescent stage.

The treatment of *acute ulcerative endocarditis* is very unsatisfactory. As a rule, in childhood, the disease is met with as a concomitant or as an intercurrent affection in the course of diphtheria, the infectious diseases, or suppurative disease of the bone or joints. The cases are almost invariably fatal.

It has been suggested to apply an ice-bag to the præcordia, with the internal administration of antiseptics, as salicylate of soda, benzoate of soda, and sulphate of quinine.

The tincture or infusion of digitalis may be administered in large and increasing doses.

The exhibition of camphor in an emulsion made with the yelk of an egg would perhaps mitigate the symptoms. Musk would also be indicated, and carbonate of ammonia as a rapid general diffusible stimulant. Recognizing the fact that the endocardium is teeming with micro-organisms, authorities have advised the exhibition of the following, known as Van Swieten's solution:

℞ Hydrarg. chlor. cor., grm. 1;
Alcoholis, grms. 100;
Aquæ, grms. 900. M.
fʒi contains about $\frac{1}{16}$ grain of the bichloride.

In the treatment of *pericarditis* we must also remember that the disease is apt to be intercurrent. Should it occur with rheumatism, the treatment of this affection must be pushed actively. Locally, we may apply heat and moisture by poultices, or the præcordia may first be painted with iodine and the poultice applied.

Some writers advise the application of an ice-bag to the region under consideration. Gendrin is of the opinion that it immediately diminishes the local pain, calms the tumultuous pulsations of the heart and the extreme anxiety of the patient; as a rule, also, its refrigerant action diminishes the febrile movement in a little while and lowers the frequency of the pulse. In our opinion it should be tried only with great caution, and then only in children who are very robust. Its application should be limited, in order not to depress the patient. Pulse and temperature are to be watched, and as they return to normal the ice is to be removed. Within the last few years, coiled rubber tubing, through which water of varying temperature may be passed, has been suggested, and is, in our opinion, far better than the use of ice. We consider that mercurialization is never allowable and that venesection is only occasionally admissible.

Aconite, veratria, and tartar emetic are to be looked upon as dangerous remedies, except in the hands of experienced practitioners. Undoubtedly there are sthenic cases where the first-mentioned drug may be used with benefit. The application of a large blister to the præcordia is sometimes accompanied by very happy results in pericarditis. It would perhaps be safer to restrict this treatment to children over ten years of age. To Corvisart is due the credit of first calling the attention of the general profession to this mode of treatment, but it should be limited to cases where effusion is suspected. Much nourishment is required, together with alcoholic stimulants. Should marked depression arise with impending asystole, brandy and digitalis may be administered. The patient must be at absolute rest, and not allowed to sit up under any circumstances if there are evidences of syncope. This depression of the vital energies may be further combated by quinine, musk, champagne, carbonate of ammonia, hypodermic injections of brandy, ether, or camphor, and wine whey should be included in the dietary.

If an *effusion* forms and is not readily absorbable, we may make applications of flying blisters or strong iodine, with iodide of potassium internally. We must also endeavor to raise the general health to as high a state of efficiency as is possible, thus aiding absorption of the exudation. Tonics are very useful, particularly the tincture of the chloride of iron, as mist. ferri et ammoniæ acetatis (Basham's Mixture).

Diuretics, as nitrate, acetate, or citrate of potassium, scoparius, and caffeine, have been employed. We prefer the acetate and citrate of potassium.

Paracentesis pericardii.—In rare instances in children's practice will paracentesis be demanded. When we fear heart-failure, a purulent effusion or distortion, and permanent displacement of the heart, we may consider ourselves justified in tapping the pericardial sac. The presence of albuminuria and tube-casts which seem to depend upon the pericardial effusion would also be an indication for tapping.

It is stated that Schuh, in the service of Professor Skoda, was the first to puncture the pericardium. Although paracentesis seems to have been proposed by Riolan* in 1649, and performed by Romero, of Barcelona, who operated successfully, and reported his cases to the Faculty of Medicine of Paris, Mérat says that the faculty would not allow the report of Romero's successful cases to be printed in their Transactions, fearing that by so doing they would sanction an operation which as yet had not met with their approval.

After having determined the expediency of paracentesis it is not wise to wait too long, as delay is apt to set up a low grade myocarditis, with fatty degeneration of the muscular wall of the heart and dilatation of its cavities.

In performing the operation it is best to use an aspirator with a vacuum jar, a delicate double canula: the innermost portion may be either a solid needle or a needle-pointed tube, either of which are to be withdrawn, the former entirely, and the latter until its point is sheathed.

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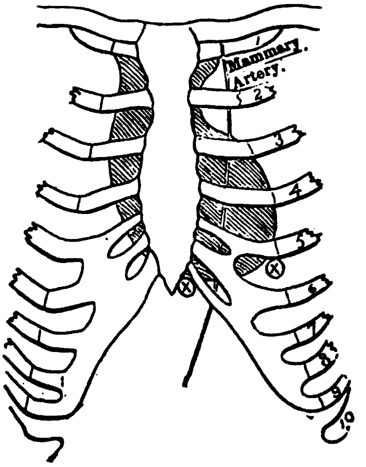
* Enchiridion Anatom., lib. iii. c. 4 (1649), quoted by Roberts.

Should the fluid reaccumulate, a second or third tapping may be resorted to, as in the case recorded by Gooch, referred to in table, in which a child aged thirteen was tapped six times, and Bouchout's case, in which a girl aged eleven and a half was tapped eight times. The danger does not seem to increase any in proportion to the number of tappings.

We do not favor the injection of any substance into the pericardium either with a view of antisepsis or of washing out the sac, although Aran's case, recorded in Trousseau's Clin. Med., iii. 386, in which iodine was injected twice, shows that the procedure may not always be attended with fatal results.

Should pus accumulate, and after several aspirations fail to resolve, there can be no objection to an opening being made to secure perfect drainage, as purulent pericarditis if left to nature will almost inevitably prove fatal.



It is essential to definitely settle the point at which we are to aspirate with the least danger of wounding the heart-muscle, and with the greatest certainty of reaching the effusion.

These objects can perhaps be best fulfilled by introducing the needle either in the left costo-xiphoid angle and pushing upwards towards the heart, or by inserting the trocar at the fifth interspace, about where the apex should normally be situated when it is not displaced, remembering that in the very young the heart is situated slightly higher in the thorax.

Care should be taken not to wound the mammary artery.

The accompanying figure will serve to illustrate the parts mentioned. The ⊗ indicates points for puncturing the pericardium.

In selecting the first-mentioned site for puncture it is well to introduce the needle as close to the ensiform cartilage as possible, thus avoiding the artery. It also should be inserted as high as possible in the fossa, so as to be sure of entering the pericardial sac and not the abdominal cavity, as it may pass below the diaphragmatic arch. The presence of fluid will, however, so distend the sac that there is little if any danger of not reaching the fluid or of wounding surrounding structures. We have been present at many examinations of the cadaver in conjunction with Dr. Osler in which a needle introduced as above always readily perforated the pericardial cavity. There is little danger of reaching the pleura, as it curves to the left before reaching the xiphoid cartilage.

The position in the fifth interspace over the location of the normal apex-beat is safe, easy of location, and has always been attended with satisfactory results in our hands as far as the mechanics of the operation are concerned.

The skin in the young is usually so tender that it is not necessary to make a preliminary skin puncture, as we sometimes do in an adult.

As the effusion decreases it is well to withdraw the needle somewhat in order to prevent laceration or wounding of the heart-muscle; the final withdrawal of the needle is accomplished when we think that enough or all of the fluid has been removed.

A simple adhesive strip may be placed over the point of puncture.

In cases of sacculated pericardial effusion the operator will of course introduce the needle at that point where the signs of effusion are most marked and which presents the least evidence of the presence of the heart-muscle. Occasionally, after the introduction of the canula, there will be no flow. This may

*Table of Cases of Paracentesis Pericardii.**

Operator.	Sex and Age.	Mode and Site of Operation.	Recovery.	Death.	Time that Patient survived the Operation.	Remarks.	Complication.	Reference.
Roger................	M. 5	Aspiration. 6th interspace.	1			At first no fluid, then blood and serum, followed by pure blood, apparently venous and not in jets. 200 grammes. Child became pale. Improvement followed. Pericarditis did not return. Death occurred five months after operation. Author says right ventricle was wounded.	Dilatation and valvular disease of the heart.	Bull. de l'Acad. de Méd., 1875, t. xl. p. 1276.
Villeneuve........	M. 5	Aspiration. Most projecting point.	1			Two syringefuls of serum. Puncture did not close, fluid became purulent and flowed for nearly six months. Finally closed spontaneously.		Lond. Med. Rec., September 15, 1875, p. 532; from Marseille Méd.
Lubric..............	M. 6	Trocar. 5th interspace, four centimetres outside nipple.		1		Intended to tap left pleura, as diagnosis was pleuritis and pericarditis. F℥xvi purulent serum flowed, but autopsy showed it had come from pericardium, and that pleura was adherent. Reporter says that death must not be attributed to the tapping.		Bull. de l'Acad. de Méd., 1875, t. xl. p. 1216; id., t. xxxvii. p. 658.
Juergensen.......	M. 6	Tiersch's syringe at first (aspiration). Trocar second operation. Site not given.		1	7 days.	First tapping, ℥iii pus. Second operation, two days after, ℥vi½ pus. Left canula in sac and washed out with salt solution. Died with cerebral symptoms. Followed pneumonia of left side.	Cerebral meningitis.	Ziemssen's Cyclopædia of Med., Amer. edit., vol. v. p. 113.
Duncan............	M. boy.	Trocar.		1	Few hours.			Edinb. M. J., October, 1872, p. 376.
Heath................	M. 6	Aspiration. 3d and 4th interspaces.		1	50 days.	Tapped pericardium twice. F℥iii¾ and f℥vi. Tapped abdomen twice.	Phthisis and tubercular peritonitis.	Practitioner, xl. 265.
Roger................	F. 11	Trocar. 5th interspace.		1	35 days.	Tapped twice. First, 100 grammes of blood; second time, 500 grammes of serum, five days after.	Ascites.	Bull. de l'Acad. de Méd., 1875, p. 1274.
Bouchout..........	F. 11½	Aspiration. 5th interspace.		1	34 days.	Tapped eight times at same place. Serous effusion becoming hemorrhagic. Two punctures of the heart without accidents. Death followed three days after eighth operation. Intervals between the operations were four	Left pleuritis six weeks previously; endocarditis.	Gaz. des Hôpitaux, 1873, p. 1130.

					days, three days, three days, four days, seven days, seven days, three days. Autopsy showed nearly 800 grammes of chocolate-colored fluid in pericardium. No syncope or aggravation seemed to follow the punctures of the heart, though 80 grammes and 30 grammes of blood were withdrawn.		
Roger................	F. 12	Trocar. 6th interspace.		1	1 day.	Removed 750 grammes. At first no flow; introduced lower down.	Myocarditis and heart clot.	Bull. de l'Acad. de Méd., 1875, p. 1284.
Saundby...........	M. 13	Aspiration. 4th interspace.		1	Few hours.	Removed pus, f℥xxx; probably from rupture of pulmonary abscess.	Pleurisy and abscess of lung.	Edinb. M. J., March, 1875, p. 799.
Gooch...............	M. 13	Aspiration. 5th interspace.		1	38 days.	Tapped six times. Purulent fluid, f℥xxi; f℥xxxv; f℥xl—iodine injected; f℥l—iodine; f℥xxx; f℥xx—iodine.	Peritonitis.	Brit. M. J., June 19, 1875.
Smith, J. L.......	— 13	Aspiration.		1		F℥xxx pus. Autopsy showed f℥xxxvi in pericardium. Pericardial effusion probably developed by admission of pleuritic effusion through a minute opening.	Pleurisy.	New York Med. Record, February 12, 1876, p. 110.
Jowett..............	F. 14	Not stated.		?	Life prolonged.	Hope of recovery.		Günther, Blutigen Operationen, iv. 8, 102.
Norris, Herbert..	F. 14	Bowditch's pump and canula. 4th interspace.		1	22 hours.	F℥iiss serum.	Acute rheumatism, acute endocarditis, and pleuritis.	Agnew's Surgery, i. p. 348.
Jobert...............	M. 16	Incision and trocar. 5th interspace.	1			Removed 400 grammes. Tapped pleura also. Under notice for three months.	Phthisis.	Trousseau, Clin. Med., iii. 370.
Hunt (?)...........	F. 16	Aspiration. 4th interspace.		1	2 days.	Few drachms. At autopsy pericardium contained f℥xiv. Near puncture firm adhesion to heart, which may account for small amount of fluid obtained.	Rheumatic fever.	Lancet, March 10, 1877, p. 343.
Pepper..............	F. 17	Aspiration. 5th interspace.		1		f℥viii serum. Able to get out of bed twenty-six days after operation. Pleuritis and ascites three and a half months subsequently. Death occurred fifteen months after operation. Autopsy showed complete adhesion, no valvular lesion, fatty degeneration of muscular structure.	Albuminuria and casts; due to effusion in pericardium.	Medical News and Library, March, 1878, and Amer. Journal Med. Sci., April, 1879.
Heger.................	M. 19	Trocar. 5th interspace.		1	69 days.	Tapped twice. 1500 grammes and 400 grammes. Drainage-tube left in six hours.	Phthisis.	Arch. Gén. de Méd., November, 1854.
West..................	M. 16	Aspiration.	1			Pericardium tapped twice and laid open. Temperature neither before nor after the operation was above normal.		Brit. M. J., April 2, 1887.

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* Collated in the main from J. B. Roberts's Paracentesis of the Pericardium (J. B. Lippincott & Co., 1880).

depend upon two conditions: either a thickened pericardium has been pushed in front of the needle, or the fluid is too thick or flaky to admit of a flow through the calibre of the particular instrument that is inserted. If the operator is satisfied of the correctness of his diagnosis in regard to the presence of fluid, it is well to reintroduce in the case of thickened membrane, and in the latter instance to select a larger trocar and canula.

Certain *dangers* are to be met with in paracentesis pericardii. Great care is to be exercised in order to prevent the entrance of air, and the consequent change of a serous effusion into a purulent one teeming with bacteria. Albert Wilson has recorded a case of pericarditis in which he considers a specific micro-organism was found independently of any outside contamination, which will be referred to later in our study.

The operator must also avoid wounding or perforating either the pleura, diaphragm, or heart-muscle, but above all must he guard against wounding the internal mammary artery and producing alarming hemorrhage. Anatomists tell us that it arises from the subclavian, and takes a downward course parallel with the edge of the sternum until the sixth costal cartilage is reached. At its lower edge it divides into two branches, the superior epigastric, running on downwards, and the musculophrenic, which runs along the sixth interspace.

Cruveilhier and Sappey (Roberts) give as the average distance of the artery from the sternum at the fifth or sixth interspace four to five millimetres, but Roger has found in children that the distance is only two or three millimetres.

That wounding or perforation of the heart may and does occur, witness the case recorded by Roger,* of a child æt. eleven, in whom one hundred grammes of blood was removed by wounding the ventricle, and his second case,* of a boy æt. five, in whom two hundred grammes of venous blood was removed from tapping the right ventricle. The case recovered.

Wounding of the heart may usually be avoided by selecting a sufficiently low point for puncturing. There is much greater danger to life in inadvertently tapping the auricle than there is in perforation of the ventricle.

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* Referred to in table.

It is never well to draw off large pericardial effusions rapidly, hence we would suggest aspiration in these cases by a capillary tube. If a larger tube is used there is great danger of cardiac arrest.

The treatment of the complications or concomitants of pericardial effusion is in the main governed by the factors present in each individual case, as, for example, should renal complications arise, the physician is to determine at once whether the pericardial effusion itself is not giving rise to the abnormal renal action. Frequently do we meet the converse of the proposition,—*i.e.*, the hydropericardium of Bright's disease. Pleurisy and pneumonia arising with or antedating the pericardial effusion must be treated on general principles, recognizing, however, the additional gravity in the prognosis.

Case.—The case reported by Albert Wilson,* referred to above, is of much interest on account of the apparent pathogenic significance of the bacillus.

E., a girl, æt. seventeen, had a regurgitant mitral murmur for five years. Contracted acute rheumatism. Acute pericarditis, with a pericardial effusion, rapidly arose, complicated with left pleural effusion. Patient died twenty-one days after being first attacked by the disease.

Autopsy.—Face dark blue. Pericardium and heart were distended. Right lung retracted, solid, non-crepitant; was in stage of red hepatization. Left lung was pale, crepitant, and adherent to the pericardium. Left pleura contained three pints of clear serum. No adhesions posteriorly. The pericardium was about one-fourth to three-eighths of an inch thick, strongly adherent to the heart, and impossible to separate it. Even the large vessels were matted with organized lymph.

Mitral valve showed old lesions, left ventricle greatly hypertrophied, etc.

Microscopic examination.—Scrapings of pericardium showed in fresh and dry state very small, short, non-nucleated rods, which take the pink stain. They are micro-bacilli.

Inoculation experiments.—He used three sterilized preparations:

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* Edinb. Med. Journ., vol. xxx., 1885, p. 1105.

First, carrot infusion, two months old; second, calf jelly; third, ascitic serum, collected antiseptically, three weeks old, and perfectly clear.

Pericardium experiments.—Under the spray, and with strict antiseptic precautions, a piece of the pericardium was removed, little pieces of lymph were scraped off, and a flask of serum was inoculated and placed in an incubator at 90° F. The upper part of the fluid remained clear, but a deposit formed at the bottom. The germs were anærobic. Examined microscopically, they were found to contain the same micro-bacilli above referred to, without nuclei. Similarly two other sterilized flasks of serum were inoculated from the flask with the same results.

Microscopic section of heart.—The section of the pericardium showed wavy layers of fibrin and lymph more or less organized. Strewn in the meshes were small clusters of micro-bacilli.

Wilson concludes that the pericarditis was undoubtedly associated with a micro-bacillus, which was the primary germ or parasite.

HYDROPERICARDIUM.

Dropsy of the pericardium is probably always a secondary disease. The pericardial sac normally contains a small amount of serum,—about half a drachm,—but it is usually increased during the last days of a patient's life, so that most usually on the post-mortem table we note a greater or less quantity of fluid in the pericardium.

Pericardial dropsy is met with in cases of general dropsy, in Bright's disease, emphysema following pertussis in the child, in thoracic deformities causing pressure, and in organic heart-disease causing blood-stasis.

The process is entirely passive, hence we do not encounter any fever, and no traces of inflammation can be noted upon the pericardial surfaces. The fluid is not particularly prone to become abundant, consequently bulging is not well marked. Friction-sounds never occur.

Hydropericardium may arise as the last scene in grave diseases. In such the differential diagnosis between muscular degeneration, its consequent asystole, and hydropericardium is indeed a difficult task.

In most cases of dropsy of the pericardium we may note a small pulse, dyspnœa, venous stasis, and cyanosis, scanty urine, and compression of the lungs, a train of symptoms that are not at all characteristic. Owing to the nature of the structures in early life we may observe depression of the diaphragm if the fluid is at all abundant.

Paracentesis may possibly be indicated in order to relieve symptoms or prolong life. The further treatment of the case is simply that of the disease with which it is intercurrent, and of the general anasarca.

HÆMOPERICARDIUM.

This is a rare disease in early life, except when due to rupture of the delicate vessels in cases of acute pericarditis in which the exudate is commencing to organize. It may also be due to either the rupture of a cardiac aneurism, an aortic aneurism of the first part of the arch, or even to a rupture of an aneurism of the coronary arteries.

Children may present pericardial hemorrhage in cases of scurvy or purpura. We may also call attention to our previous remarks on hæmorrhagic pericarditis.

PNEUMOPERICARDIUM.

A pericardium containing gas is an extremely rare condition. Some authors state that they have observed it when the pericardium contains a decomposing fluid. The gas or air may be admitted from an abscess of adjacent tissues, which has perforated the pericardium. Death always rapidly occurs, except, however, in traumatic cases, in which recovery may and does sometimes occur.

Tumors may invade the pericardium. They are rarely primary, but most usually due to secondary involvement by carcinomatous growths which have their primary seat in the mediastinum or œsophagus. This condition is rare in early life.

(To be continued.)

INTUSSUSCEPTION IN INFANTS.

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WITH

REMARKS BY DRS. EARLE, WAXHAM, AND OTHERS.

Read before the Chicago Medical Society, March 21, 1887.

INTUSSUSCEPTION or invagination of the upper into the lower portion of the intestine is one of the most frequent causes of acute obstruction of the bowel, constituting, according to Brinton, not less than forty-three per cent. of the fatal cases, and from the more elaborate table of Leichtenstern we find more than thirty-eight per cent. due to this cause.

Males are more frequently affected than females. In regard to age, West publishes a table of seventy-one cases under fifteen years, of which forty cases occurred during the first year and thirty-one in the fourteen succeeding years.

According to Mr. Treves, one of the best authorities on intestinal obstruction, one-half of all cases occur during the first ten years of life and one-fourth during the first twelve months. From a scrutiny of these tables it would appear that from the fourth to the eighth month seems to be the time when there is the greatest danger of invagination taking place in an infant.

My reasons, therefore, for bringing this subject before you for careful consideration and discussion are its comparative frequency and great mortality. The suddenness of the attack demands prompt attention and correct diagnosis and treatment, and if I can enlist your attention and emphasize correct principles of procedure in these cases that may result in the saving of additional lives at our hands, the purposes of this paper will have been attained.

An intussusception embraces three layers of the bowel, each embracing all the coats of the intestine. The external layer is called the sheath or intussuscipiens, while the internal or entering layer and the middle or returning layer together are called the intussusceptum. The neck is the junction of the external and middle layers, and the apex the junction of the middle and internal layers. These are sometimes doubled when we have five layers, and more rarely tripled when we have seven layers.

Intussusception may occur in one of three anatomical locations, and I will mention them in their order of frequency: either first at the ileo-cæcal valve, second in the ileum or jejunum, and third in the colon.

The annexed table gives the relative frequency upon this point, as collected by Brinton, Leichtenstern, and Bulteau, showing different varieties of intussusception:

Author.	Ileo-cæcal and Ileo-colic. Per cent.	Ileal and Jejunu. Per cent.	Colic. Per cent.
Brinton	56	28	12
Leichtenstern	44.8	30	18
Bulteau	51.4	28.8	19.8

Thus we see one-half of the cases occur at the ileo-cæcal valve, one-third in the small intestine, and one-sixth in the large bowel.

Intussusceptions soon become irreducible from adhesions forming between the peritoneal surfaces of the entering and returning layers, which are usually most firm at the neck, and reducibility is soon still further interfered with by swelling, œdema, or bending and twisting of the intussusceptum. The sheath suffers but little change, as a rule, although perforation due to pressure-ulceration may take place. The intussusceptum, however, very soon becomes strangulated and gangrenous, hence the necessity for prompt recognition and relief.

Experimental investigation by Nothnagel into the etiology of this subject has determined two causative factors, which have been confirmed by clinical experience, to wit, spasmodic and paralytic, the former being much the more common, and following an irregular and disorderly contraction of the bowel from whatever cause,—and contrary to most writers, he believes that the intussusception occurs at the expense of the healthy gut, which is drawn over the lower contracted portion, perhaps by the action of the longitudinal muscular fibres acting from a fixed point, as Mr. Irenes has suggested,—a sort of retrograde intussusception.

Among predisposing causes may be mentioned feeble health, diarrhœa, the presence of irritating or undigested food, worms, intestinal polypi, adhesions following injury, etc. At post-mortem examination we frequently find multiple short invaginations of the small intestine that gave rise to no symptoms during the life of the patient. These were probably formed during the agonistic period by irregular muscular contraction and dilatation just preceding dissolution, as the appearance of the bowel is unchanged, no discoloration or adhesions being present, and the invaginations yielding to the gentlest traction.

The diagnosis of intussusception in an infant is usually an easy matter. A baby previously in good health is taken with sudden, violent vomiting, with loud cries and evidence of abdominal pain and uneasiness occurring at frequent irregular intervals, and accompanied with severe straining and the passage at first of fæcal matter, and then of mucus tinged with blood, and later of blood alone, in considerable quantities. Thirst, anxious expression, and collapse are marked symptoms, and a distinct, sausage-shaped tumor can frequently be felt at the site of the obstruction in the abdomen.

The continuance of the intussusception leads to exhaustion, a rapid, weak pulse, sunken, pallid face, dull eye, semi-comatose condition, from which it is only aroused by attacks of vomiting and straining, with bloody stools, until death usually closes the scene in from two to five days in cases that are left to nature, some holding out for seven days. Convulsions are occasionally met with, and spontaneous disentanglement of the invaginated portion rarely occurs.

Jonathan Hutchinson says, "I have not found any case recorded in which spontaneous return of a well-recognized intussusception occurred, and those in which art succeeded are comparatively rare."

Elimination of the gut by gangrene and its passage *per via naturales* is an effort of nature to teach surgeons the necessity of interference in all cases of acute obstruction, for in twenty-four per cent. of cases sloughing occurs, and the immediate effect of the separation is fatal in forty per cent. of these, nature not being well posted in regard to the necessity for germicides and the sealing up of peritoneal surfaces to preserve the continuity of the lumen of the intestinal tube. Many others operated on by nature who do not succumb at once die later of stricture, the result of gangrene. In cases of non-interference, the chance of cure by sloughing or otherwise is given as follows: J. Lewis Smith, of New York, reports fifty cases, with seven recoveries; Haven, of Boston, collected fifty-nine cases, with ten recoveries; and Duchanssoy, one hundred and thirty-five cases, with only twenty-nine recoveries. Therefore the chance of life by natural means is as one to five, or about eighteen per cent. of recoveries, not a very hopeful outlook. Leichtenstern's later table gives five hundred and fifty-seven cases, with one hundred and fifty-one recoveries, or twenty-two per cent. Fagge remarks that in these cases of natural cure the fatal result is postponed, not prevented.

In the differential diagnosis of these cases we must bear in mind volvulus, hernia, congenital stricture, interstitial polypus, strangulation by bands of lymph, foreign bodies in the bowel acute enteritis, proctitis or peritonitis, as having symptoms somewhat in common; but with a careful examination by exclusion we can easily reach a correct diagnosis, and if there is any doubt the child should be anæsthetized, and the abdomen thoroughly and systematically palpated for a tumor, or examined per rectum for a hardened mass.

Treatment may, for convenience of description, be divided into three plans:

1, medicinal; 2, mechanical; 3, operative.

The medicinal plan of treatment is essentially palliative or expectant, and rarely or never curative. It is a non-interference with the essential factor of the disease, and a pleasant kind of delusion that practises euthanasia on these little victims by hot poultices, opium, and rest.

The second plan of treatment embraces the relief of the intussusception by mechanical means,—rectal injections of warm water, insufflation of carbonic acid gas or air to unfold the invagination, manual manipulation of the abdomen under anæsthesia, traction upon either end of the sausage-shaped tumor, if one is found; and inversion of the child during the injection, with violent shaking, has been advised, although I doubt whether the inversion aids the enema much, if any. The administration of shot or mercury is a nearly obsolete procedure.

In regard to the details of the mechanical plan of treatment: having once clearly established a diagnosis of acute obstruction of the bowel in an infant, due to intussusception, I proceed as follows. Having previously given an opiate to quiet all peristalsis, I anæsthetize the child with chloroform, on account of its safety and celerity with children, then carry a rectal tube or large catheter about six inches within the anus (the child lying on its back across the knees of its nurse or an assistant). Attached to this tube or catheter I have a flexible rubber tube, some two or three feet long, leading to and attached to a small glass funnel. Into this funnel I pour alternately solutions of soda bicarbonate and tartaric acid, as recommended by Ziemssen and successfully employed by Leibur and Jate, thus generating carbonic acid gas, and rapidly and safely inflating the large intestine. Three drachms of each will generate enough gas to completely distend the colon of a child. If this pressure is not sufficient to relieve the obstruction, I then attach an ordinary double bulb-syringe, and inflate with air as much as I think the bowel will stand, while the abdomen is being carefully manipulated by an assistant. If this does not relieve the intussusception, I then resort to warm water enemas, using as much pressure as the bowel will bear without danger of rupture. The instrument of Mr. Lund, with a rubber collar to prevent the backward expulsion of the water, is best for this purpose, although an ordinary enema or fountain-syringe answers the purpose very well, if the buttocks are well pressed together and the surgeon sits by the side of the child. Dr. W. E. Forest states that if a pressure of six pounds to the square inch does not reduce the tumor, to cautiously raise the pressure to seven, eight, or even nine pounds to the square inch, depending on the acuteness of the attack and the length of time the invagination has existed.

I patiently, persistently, and repeatedly employ these measures, coupled with massage, abdominal taxis, inversion of child, etc., for from twenty-four to forty-eight hours, according to the age and condition of the child, when, if there is no relief, I advise laparotomy as offering the best chance for the child's recovery, if under three years of age. I am not sure but that I will advise laparotomy after twenty-four hours' trial of mechanical means without success in the future. The operation is yet in its infancy, and while at present the statistics do not show any very marked improvement over non-interference in cases of irreducible acute invagination, I am satisfied that a larger experience, improved technique, and earlier surgical interference will result in lessened mortality and a better statistical record. So far no case under six months of age has recovered that was subjected to laparotomy. In Schramm's table of one hundred and ninety operations of abdominal section done for the relief of intestinal obstruction, twenty-seven cases were for the relief of intussusception, with eight recoveries and nineteen deaths, a mortality of 70.4 per cent.; of Ashhurst's table of sixty-five cases, sixteen recovered and forty-nine died, a mortality of 75.4 per cent. In Senn's address on surgery before the American Medical Association in 1886 he states that in fifty-one cases where laparotomy was done, reduction of the intussusception was accomplished in twenty-six cases, eighteen children, with four recoveries, and eight adults, with five recoveries; of the remaining twenty-five cases, where reduction failed, all terminated fatally. So far abdominal section for invagination has only been attended by success when disinvagination by manipulation has been accomplished. A statement that pleads earnestly for early operation before the bowel is so matted together that reduction is impossible.

Mr. J. Grey Smith lays down the following rules to guide us in performing laparotomy for acute obstruction of the bowels.

1. Make the incision in the middle line below the umbilicus.

2. Fix upon the most dilated or the most congested portion of the bowel that lies near the surface, and follow it with the finger as a guide to the seat of obstruction.

3. If this fails, draw the intestine out of the wound, carefully covering it until increase of distention or congestion, or both, in one of the coils gives an indication that the stricture lies near.

4. If there be considerable distention of the intestines, evacuate their contents by incision and suture the wound. Never consider an operation for intestinal obstruction within the abdomen complete until the bowels are relieved of overdistention.

5. Be expeditious, for such cases suffer severely from shock. The whole operation ought to be concluded in half an hour.

After opening the abdomen, Mr. Hulke suggests that we find the obstruction by tracing the collapsed and empty bowel from below upwards to the point of invagination. In some cases this would probably be preferable, but with the greater frequency of intussusception at the ileo-cæcal valve, a practical physician would be apt to go directly to that point first with his finger unless a distinct tumor presented elsewhere, otherwise Smith or Hulke's plan of search would be adopted.

In performing laparotomy upon an infant the same general rules in regard to temperature of the room, absolute cleanliness of field of operation and instruments, as are laid down for abdominal section in general are applicable, and I need not trespass upon your time to speak of them in detail. Having opened the abdomen and found the point of intussusception, gentle efforts should be made to unfold the invagination by traction and manipulation, pulling or pushing the intussusception out of its sheath, straightening out any twist or bending that may have occurred secondarily, and making traction with reference to the mesentery. More than half the cases will yield to this plan of reduction. Where there is great œdema and congestion, multiple aseptic punctures will permit the escape of blood and serum and facilitate the reduction. If the gut be gangrenous, it should be stitched to the abdominal wound and an artificial anus formed by an enterotomy, as this gives a better chance for life than a primary typical resection or enterectomy. In case the obstruction is at the ileo-cæcal valve and is irreducible and an artificial anus cannot be readily formed, an ileo-colotomy or implantation of the divided ileum above the obstruction into a slit-like orifice in the colon below the obstruction would be a justifiable procedure. Although I believe it has never yet been done in man, Senn's recent experiments on animals prove that it can be done with success, the Czerney-Lembert suture being used in this operation the same as in resection of the bowel. The closure of the abdominal wound, after the parts have been irrigated with a hot solution of boracic acid and slightly dusted with iodoform, is accomplished in the usual manner by interrupted aseptic sutures and a heavy Lister dressing. The after-treatment consists in opium, starvation, and absolute rest for a few days.

The following cases which have fallen under my observation are submitted as illustrating the principles of treatment advocated in this paper:

CASE I. Baby Flood, male, æt. six months. About 4 P.M. I was called to see this child, and the mother stated that it had always been strong and well until about two hours previous to my visit, when he suddenly began screaming, vomiting, and straining. The first stool was natural looking, the next mixed with blood, and after that mucous and bloody only. His appearance was striking: he lay on his mother's knee, pallid-looking, with a dull eye, in a semi-comatose condition, from which he would awake with a scream every few minutes, vomit and strain, forcing out a little bloody mucus. Between the attacks of pain the abdominal walls were soft and relaxed, permitting a careful and thorough examination of the abdominal viscera. On the right side, midway between the umbilicus and spine of the ileum, a distinct sausage-shaped tumor about four and a half inches long and one and a half inches in diameter could be readily felt, and pressure of this mass excited pain, contraction, and straining. Recognizing the case as one of intussusception of the colon, demanding prompt mechanical relief, I called Dr. S. A. McWilliams in consultation, who, after a very careful examination, confirmed the diagnosis and acquiesced in the plan of treatment I had mapped out. The child was anæsthetized with chloroform and laid across the mother's knees on its back with the thighs flexed on the abdomen, and with a double bulb pharyngeal insufflator attached to a large-sized catheter, No. 15, introduced into the rectum, I rapidly inflated the colon, while Professor McWilliams kneaded the abdomen and attempted to unfold the invagination by traction above and below the tumor, and occasionally suspending the child by the heels. After two or three inflations, or within an hour from the time the treatment was instituted, the distended abdomen was relaxed and the previously distended colon suddenly collapsed, and the welcome rumbling of borborygmus was heard, followed in a short time by a natural stool. The after-treatment consisted of paregoric and poultices for a couple of days, since which time the child has remained perfectly well.

CASE II. Charley Wheeler, æt. nine months. Was called about 6 P.M. His mother stated that during the forenoon the baby became restless, cried frequently, and wanted to go to stool every few minutes, but only passed a little bloody mucus; that he had not had a natural passage that day. He was a weak, delicate child, having had an attack of diarrhœa some weeks previously, and had not been well since. When I entered the house the child was leaning against a chair with his hands in a half-squatting position, grunting, crying, and straining alternately. He could not be induced to lie down, and when taken up would immediately wriggle out of his mother's arms and assume the position just described, and again grunt and strain, forcing out a little bloody mucus. I suspected obstruction at the ileo-cæcal valve from intussusception, and examined him thoroughly, but could find no tumor nor any protrusion within reach of a finger introduced into the rectum. He was put under the influence of chloroform and carefully re-examined by Dr. W. J. C. Casely and myself, and, although we could find no tumor, the symptoms pointed so strongly to invagination that I determined to use forced injections of warm water. An ordinary Davidson syringe was used without any catheter attachment, and one quart was forced in, distending the colon and causing a good deal of pain; it was expelled with force enough to knock the chimney off a lamp an incautious assistant held within range, but contained no fæcal matter. Another large enema was also negative in its results, when I gave a third enema of over a quart, and then while I occluded the anus with one hand, I suspended the child by the heels and shook him vigorously while Dr. Casely manipulated the abdomen. Suddenly the child became cyanotic and ceased to breathe: the face was livid, the eyes staring and pupils dilated fully, no pulse perceptible, and to all intents and purposes the child was dead. I employed artificial respiration to restore him, and by compressing the abdomen forced out the water which had remained in the distended and temporarily paralyzed bowel. After vigorous efforts he was restored to consciousness, and a moderate injection that was given came away tinged with fæcal matter, and we were satisfied with that much for that night. He was given paregoric and a hot poultice applied. The next morning I repeated the injection and obtained more fæcal matter. From this time on there was no more urgency in the symptoms, and at the end of a week or ten days he was quite well and has remained well ever since.

CASE III. Baby Hack, female, æt. nine months. February, 1886, about 8.30 P.M., I was called by Dr. D. B. Eaton to see this child, and obtained the following history: The child had been obstinately constipated for two or three days, no passage except a little blood and mucus coming away. She vomited frequently and would strain often, but otherwise did not seem to suffer. Had little or no pain and had taken no medicine. Dr. Eaton had first seen her that afternoon. The symptoms were not specially urgent, but pointed strongly to obstruction of the bowels either from invagination, volvulus, or a band of lymph or mesentery. Near the umbilicus on the left side a pretty well defined oblong-shaped tumor could be felt. So it was determined to use large enemas of warm water; these were continued at intervals for about two or three hours, under chloroform, some five or six injections being given, child inverted, etc. About 1 A.M. fæcal matter appeared in the injected fluid as it returned, and further efforts ceased. She made a rapid recovery.

CASE IV. Otto P., æt. five months. Was called by Dr. C. C. Beery to see this baby in consultation October 26, 1886. There was a history of congenital syphilis, the child had been sick with obstruction of the bowels for three or four days, was vomiting, straining, and having frequent bloody stools. No tumor could be detected, nothing felt per rectum, abdomen was rather tender. Copious injections of warm water were used, without relief. Laparotomy was declined, and the babe died rather suddenly the same night from symptoms of intestinal rupture. No post-mortem examination was permitted.

Such, in brief, is the history of four cases that have fallen under my observation, and I present them as an addition to the sum total of our knowledge on this interesting subject.

Dr. Earle, in opening the discussion, said the symptoms of this terrible difficulty have been so fully presented by the author of the paper that it is not necessary to say anything more in regard to symptomatology. He was glad that the author dwelt upon the symptom of constriction of part of the bowel, which is probably one of the chief causes of this accident. I must take issue with him in regard to the ease with which he diagnosticates some of these cases. His experience has been very different from my own when he is able to say that the diagnosis of intussusception in a child is made out without much difficulty. In a number of cases I have seen there has been an absence of all the symptoms which the author has narrated. I remember a case which occurred several years ago in an outside village, in which I made the post-mortem, and found a very distinct intussusception. In that case we could get none of the symptoms Dr. Steele has spoken of. There was no tenesmus, no bloody discharge, no protrusion of the invaginated portion of the intestine, no sausage-shaped tumor of the abdomen, and yet the child had intussusception, probably from eating a large amount of cherries, as a number of cherry-pits were found in the bowel at the autopsy. As a medical man, it might be expected that I would oppose a surgical procedure, but the medical treatment of this difficulty is so absolutely hopeless that it seems to me if laparotomy offers anything at all we should be ready to accept anything the surgeons have to offer. However, the results of Dr. Steele's process of treatment by inversion and shaking, and filling the bowel, are really better than those of surgeons up to this time. It is a well-known fact that laparotomy for the relief of intussusception is followed by greater mortality than laparotomy for any other cause. But if the diagnosis is well made out, and particularly if the pulse is rapid, and the child shows profound symptoms which point unmistakably to this difficulty, it seems to me we are hardly justified in waiting three days. I think that at the end of twenty-four hours we should cease to try the ordinary methods and proceed to do the operation.

He asked Dr. Steele to give in his closing remarks the composition mixture of chloroform and ether in its administration to children.

Dr. Waxham: I agree with Dr. Earle in regard to the difficulty of making the diagnosis in cases of intussusception, especially in infants. In many cases I believe the diagnosis is very difficult indeed, and that sometimes a certain and absolute diagnosis is almost impossible. This is true for the reason that all the symptoms that have been enumerated as characteristic of the disease are not present in every case; the tumor is as frequently absent as present, and if a small amount of intestine is involved in the intussusception it is impossible to detect it. Again, the bloody discharges are frequently absent, and the protrusion of the intestine from the anus, which is given as a prominent symptom, is often absent. Indeed, in many cases, the incessant vomiting, obstinate constipation, and the tenesmus are the only symptoms. I would refer to the differential diagnosis of intussusception. Fæcal impaction occasionally presents symptoms analogous to intussusception. Impaction is rare in infancy, but is more frequently observed in the adult and in the older children. It may give rise to a tumor, vomiting, tenesmus, tympanitis, and even protrusion of the intestine from the anus. These symptoms closely resemble those of intussusception, but in impaction the vomiting is not usually as obstinate, and large, copious enemas will cause it to disappear. Again, in impaction we do not get the rapid and great prostration that is observed in intussusception. Cholera infantum may be mistaken for intussusception, for we have the same rapid and great prostration and collapse; we have also incessant vomiting; but in cholera infantum we have the large, copious, watery passages instead of the obstinate constipation followed by the bloody discharges. Dysentery presents symptoms closely resembling intussusception in many cases: we have vomiting, tenesmus, frequent straining, bloody passages, and not unfrequently protrusion of the intestine from the anus, but in dysentery the vomiting is not so obstinate nor the prostration so great. Typhlitis may present symptoms very closely resembling the difficulty under consideration. As the result of inflammation at the ileo-cæcal valve we will have vomiting, intestinal pain, tympanitis, obstinate constipation, which it is impossible oftentimes to overcome. The diagnosis in these cases is very difficult, and I know of one case of typhlitis where several surgeons thought seriously of operating for a suspected intussusception. But in typhlitis the tumor, which results from inflammation and infiltration, is in the right side, while in intussusception the tumor, when observed, is in the left iliac region or in the transverse colon, for although the intussusception takes place at the ileo-cæcal valve, if the tumor is large enough to be observed, the smaller intestine rolls in the larger until the tumor appears in the left side instead of the right. In typhlitis we have a history of acute inflammation, not so in case of intussusception. Peritonitis will also frequently give rise to symptoms resembling those of intussusception; we have frequent vomiting, obstinate constipation, abdominal pain, and tympanitis. I remember a case that was treated for several days for intussusception, and not until the administration of morphia and lime-water was the vomiting overcome and a correct diagnosis made. The vomiting could not have been relieved by medication in a case of intussusception. In peritonitis we usually have the gradual onset of the disease, more sudden in case of intussusception. In peritonitis we have the symptoms of acute inflammation existing for several days before we get symptoms of obstruction. In intussusception the symptoms of obstruction and shock appear early. In peritonitis, although the constipation is often obstinate, yet the vomiting is not as frequent and uncontrollable as in intussusception, nor do we have the rapid prostration in the former disease that is so characteristic of the latter. There are other forms of obstruction, such as the twisting of the intestine upon itself, pressure upon the intestine by a band of lymph, or strangulation of the intestine in a congenital opening in the diaphragm, any of which will give rise to symptoms exactly corresponding to intussusception. In regard to the treatment little remains to be said. Not infrequently when an intussusception is suspected, the cases are treated with physic, castor oil, croton oil, or quicksilver, in order to prove the diagnosis. This treatment should be mentioned only to be condemned. No remedies should be given that will increase the peristaltic contraction, but opiates given to prevent it. Quicksilver may be used with benefit in those cases where the invagination is low down in the bowel, or where the intussusception is of such extent that it reaches into the lower bowel, or perhaps near the anus. In such cases the child should be inverted, and the quicksilver used per rectum, and the pressure and weight of the quicksilver will assist greatly in the restoration of the invaginated mass. I fully agree in the recommendation of laparotomy in cases where mechanical measures fail. When we have faithfully, but unsuccessfully, tried medicinal and mechanical measures, I think we should resort to laparotomy, providing a positive diagnosis can be made; and we should not delay too long, for the longer the operation is delayed the less the chances are of recovery.

Dr. A. E. Hoadley: I would like to make one suggestion as to the surgical treatment of these cases. The author on going into the surgical treatment thoroughly has left the idea, I think, that about all that can be done for cases of acute invagination of the intestine is to unfold the invaginated intestine, and if this cannot be done, it must be excised and an artificial anus made. Of course he does not advise the resection of the invagination, but advises an artificial anus as a temporary means. Now, where this invagination is acute it obstructs the lumen of the intestine, and all the urgent symptoms are consequent on the obstruction of the bowels, not that the tissues are liable to ulceration or sloughing, provided that the tension above the invagination is promptly relieved. If the tension above the stricture is relieved the tissues at the stricture can take care of themselves, the strangulation will be immediately relieved in a measure, so that the circulation can be carried on at the seat of invagination. Relief of tension controls peristalsis, and no further invagination will take place; congestion will be relieved and the tissues saved. There has been an operation suggested for that purpose which is applicable in all cases where to unfold the invagination is more dangerous than to leave it alone or excise and establish an artificial anus. The operation is to bring that portion of bowel above the invagination to that immediately below, and there make an opening in each, stitch the openings together, and thus form an outlet for the distended intestine above. In case the invaginated portion loses its vitality, there is no objection to its sloughing, as the slough can readily pass down, as the gut is not closed below. In my own practice I have seen two cases of recovery from intussusception in which there was no doubt about the diagnosis. In one case a sausage-shaped tumor could be felt across the median line, with all the acute symptoms except, perhaps, the bloody discharges. The invaginations in these cases were of the colon, and not ileo-cæcal, and the lumen of the gut was not completely closed. There was no particular distention, but there was a large and painful tumor, with tenesmus and diarrhœa. In one case, in which the diagnosis was confirmed by several physicians, the tumor remained for more than a year, and at any time, if pressure was made upon it, there would be tenesmus of the bowel, yet the child, who is now eight years old, has fully recovered. I have a patient now under treatment where two and a half months ago there was probably intussusception of the colon. A painful tumor presented on the left side, which could be plainly felt from day to day, associated with all the irritable symptoms of the bowels, but the invagination did not occlude the lumen of the bowel, therefore the most distressing symptoms were absent. This tumor has gradually grown smaller, less tender, less painful, and the child is now about free from the irritation caused by that invagination.

Dr. J. Frank: I would like to ask if, when the invagination is situated above the ileo-cæcal valve, water injected would pass the valve itself. I hardly think the small amounts the author speaks of having injected would reduce the invagination. I am not opposed to giving cathartics in cases where they might do good, and I think sometimes they do not do as much harm as an operation. The intestines are held up by mesenteries, and if the principal part of the intestine cannot invaginate itself where it is held fast it cannot come down. A cathartic which produces a peristalsis is always towards the rectum, and if the part is held up by the mesentery, the peristaltic motion will not bring it down any farther, and yet will relieve the intussusception. I think many cases are cured by cathartics. I had a case some time ago where the child was pulseless and cold, the eyes turned on the sockets; there was a tenesmus and vomiting. After trying nearly everything an enormous dose of calomel was given, and as soon as there was a movement of the bowels the child was all right.

Dr. J. E. Colburn: Some years ago I had an interesting case. In the early morning I was called to see a child, whom I found breathing with great difficulty and presenting many symptoms of acute bronchitis. I listened carefully, and thought I located the region of the disturbance. Leaving some remedies I went away, promising to call late in the afternoon. During my absence the family became alarmed at a change of symptoms, and called in another physician, who assured them that I was mistaken, that the child had acute gastritis. When I went back in the evening the child was purging and passing blood. I made an examination, and found a tumor corresponding to the tumor described to-night. I gave a grave prognosis, left directions for the use of some remedies, and promised to see the child in the morning if it was still alive. The next morning when I called the mother told me the child was better, and showed me a chicken's foot and leg that it had swallowed.

Dr. Steele, in closing the discussion, said, in regard to Dr. Earle's criticism as to the ease of making the diagnosis, I would say that the diagnosis is not always an easy matter, and I do not wish to convey that impression. In the first case I reported the diagnosis was easy, because the case presented the symptoms laid down in the books as nearly as could be: there was vomiting, tenesmus, bloody stools, absolute constipation, and a lozenge-shaped tumor; but that is the only case of the four reported in which we had all the symptoms. In two there were no tumors at all; in one the tumor was indistinct and irregular in outline. There was no pain in that case. In none of the cases was the diagnosis verified by a post-mortem. There is an element of doubt as regards the diagnosis, but it had been formed in each case after careful examination by competent physicians, and was considered fairly certain. In regard to the relative safety of ether and chloroform in children, I cannot give the statistics, but the administration of chloroform to children is a very safe procedure as compared with its administration to adults. In regard to the differential diagnosis, Dr. Waxham presented all the points very fully. In a paper of this character I did not wish to go into the subject. In regard to the operation of cutting the bowel above and below the point of obstruction, that I allude to as an operation having been done experimentally on animals with success by Dr. Senn, of Milwaukee. So far as I know there are no statistics showing that it has been done on man. The case of obstruction occurring in a child with painful tumor, spoken of by Dr. Hoadley, was a case of chronic obstruction in which the lumen was not perfectly occluded, and those cases are not dangerous. So long as the lumen is not absolutely interfered with, the processes of nutrition go on. Cases of chronic obstruction were not considered in this paper. I spoke only of acute obstruction due to intussusception. Water passes the ileo-cæcal valve by dilatation from over-distention. I have seen the experiment tried on animals. By opening the abdomen and forcibly injecting water the colon would become distended to its utmost capacity, and by and by the tissues would begin to yield, the valve would become incompetent, and the water would pass. The quantity of water used for injections was smaller than if the obstruction had been higher up. The case of acute obstruction mentioned by Dr. Frank, that was relieved by a large dose of calomel, was probably acute enteritis; such a case as would have been relieved by bleeding many years ago. When we are called to these cases of acute intestinal obstruction where there is a doubt as to its cause, we should take into consideration all the factors, the age of the child, the sex, the suddenness of the onset, the presence of a majority of symptoms that are said to be present in intussusception, and then make a thorough, complete, and systematic palpation of the abdomen, aided, if necessary, by the distention of the colon with carbonic acid gas. By the alternate injection of an acid and alkaline solution into the rectum you can distend the colon so that it can be mapped out perfectly, and you can determine the location of the obstruction.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Filaton: Diagnosis of the Initial Period of Febrile Diseases in Children. (*Arch. f. Kinderh.*, viii. 3.)

The number of febrile diseases to which children are susceptible being so much greater in children than in adults, and children being also much more susceptible to such diseases than adults, their diagnosis becomes a matter of great importance, and it is sometimes a matter of difficulty. The difficulty is increased by the frequency with which children are attacked by ephemeral febrile conditions, by their inability to express their feelings, etc. With care and some experience, however, a fever may usually be diagnosticated between the first and third days. The first question to be considered is, whether the febrile condition is a symptom of a local trouble or whether it is a general disease. The patient should be examined over the entire surface of his body, and if an eruption is present, one should differentiate between an inflammatory disease of the skin and a general exanthematous disease. The diagnostic symptoms of the various forms of dermatitis which are accompanied by eruptions are then detailed. Acute swellings of the lymphatic glands may cause fever, which may last from five to ten days. This condition most frequently occurs between the second and fourth years of life, and is due to idiopathic inflammation of the glands at the upper end of the sterno-mastoid muscle, under the ear, under the mastoid process, and behind the angle of the jaw. It is not due to eczema of the head, discharges from the ear, inflammation of the vertebral column, nor carious teeth. The swelling may continue two to three weeks, and is not usually attended by suppuration nor by inflammation of surrounding tissues. It is unilateral in distinction from mumps, which is usually bilateral. The fever of mumps does not usually exceed 39° C., while in the glandular fever it usually reaches 39.5° to 40°. In examining for fever, the ears must be thoroughly investigated, as inflammation of the external, middle, or outer portions may give rise to it; or it may be due to furuncles at or near the external meatus, or to swelling of the glands behind the ear. Acute coryza is of great significance, not only because it is very common, but because it is the initial symptom of the ordinary cold in the head, primary nasal diphtheria, influenza, and measles. Ordinary coryza is distinguished from diphtheritic (1) by the character of the epidemic. Diphtheria usually begins in a family in the laryngeal form, and when communicated to the other children may take the nasal form, especially when communicated to infants. Simple coryza may attack several in a family at the same time; adults as well as children. It may or may not be accompanied with fever, cough, etc. (2) Primary nasal diphtheria is usually limited to infants, while no age is exempt from coryza. (3) The temperature in nasal diphtheria is usually no higher than in coryza, but in the former the child is pale and the eyes heavy; in coryza there may be high temperature, but the child does not show great depression. (4) Nasal diphtheria seldom begins on the alæ, and there may be mucous discharges in both diseases, but in diphtheria it is usually very irritating, and the mucous membrane is easily wounded; the glands of the lower jaw are also usually swollen in the latter disease. In scarlet fever we may have similar symptoms, but they usually appear after the eruption has announced itself. If the febrile coryza is accompanied by conjunctivitis and cough, measles and epidemic catarrh should suggest themselves.

Of the diseases of the mouth, *stomatitis erythematosa, stomatitis aphthosa,* and *stomacace* are accompanied by fever, and are very often indicative of irritation from the eruption of the teeth. Investigation of the throat in febrile conditions is always necessary for evidence of swelling, congestion, and with the finger if retropharyngeal abscess is suspected. The usual rules for examination of the lungs when fever is present need not be repeated; but in heart-diseases there may be no symptoms apparent. Rise of temperature during the period of *lysis,* or a recurrence of the same during convalescence, are usually due to complications, among which endocarditis must be considered. Of the febrile diseases of the abdominal organs, gastric fever is noteworthy. It may be acute or subacute. The former may have a temperature of 40° C. or more, may be accompanied by vomiting and diarrhœa, and is usually due to errors of diet. In the subacute form there are generally loss of appetite, headache, general malaise, somnolence, possibly slight fever and jaundice, and seldom vomiting and diarrhœa. It is sometimes mistaken for tuberculous inflammation of the brain. *Herpes labialis* is almost always a symptom accompanying subacute gastritis, and almost never occurs with the tubercular disease. Obstinate vomiting sometimes accompanies both diseases, but with the gastric inflammation it seems to be followed by improvement, with the cerebral inflammation by more decided exhaustion. With the vomiting from cerebral disease there are also absence of offensive breath, absence of pain on pressure over the pit of the stomach, absence of meteorism, and presence of severe headache.

Rheumatism is also an exciting cause of fever, the most common form in children being *torticollis rheumatica.* A rare form of muscular rheumatism which is attended by fever, and was described by Bamberger, affects the abdominal muscles. It may simulate peritonitis. Among diseases of the bones which have febrile symptoms, the most frequent as well as the most important in their consequences are inflammations of the vertebræ. Pain upon pressure over the diseased spinous process, contact of the same with a hot sponge, and very slight mobility of the diseased vertebræ when the column is bent, are diagnostic symptoms. Fever may also accompany acute rachitic inflammation of the bones, a fact which has been almost overlooked by writers upon this subject. A. F. C.

Billington: Local Treatment of Diphtheria. (*Med. Record,* April 9, 1887.)

Local treatment is to be regarded as the complement of constitutional measures. The factors to be considered are, first, the specific poison or contagium, the precise nature of which is unknown, but the appearance of the disease in the entrance to an air-cavity suggests that antiseptic treatment there may be of utility. Second, the inflammation, which is to be subdued or mitigated, and vetoes any active curative treatment of pharyngeal and nasal catarrh. Third, membranous exudation. But it must not be prematurely removed, as has been the tendency, for by so doing we denude a highly inflamed surface which is protected by the membrane. This should be removed by such means as will cause the least injury to healthy tissue. Caustic treatment should be employed in very few cases, and these very favorable and at an early stage. Our aim should be not so much to cure as to bring our patient out alive. Fourth, absorption of poison into the system, beginning generally with beginning of development of membranous exudation. The initial symptoms are not so characteristic as some would have us believe. The amount of constitutional infection varies directly as extent and especially depth of patch, and inversely, we may add, as the efficacy with which local antisepsis is employed. Such treatment, by removing poisonous secretions and assisting osmosis through membrane, generally keeps the absorption within limits. In many cases no constitutional poisoning has followed, in others it has gradually disappeared, and has only become fatal when for various reasons treatment was not or could not be carried out.

We have, then, to consider, first, the subduing of the inflammation, then, as a general rule, to which there are exceptions, the softening, gradually and superficially, of the false membrane, and lastly, antiseptic measures to minimize absorption and dissemination of poison.

For measures we have, first, internal administration for local effect, a simple and readily available method, the object being also partly constitutional. Among remedies of first importance here are chloride of iron and chlorate of potassium, which may be advantageously prescribed in glycerin, and glycerin and lime-water respectively. This removes the irritation. Second, gargles, which, although good for adults, are not so available as the syringe for children. This latter has also its limitations. It must be very gently applied to the larynx on account of its extreme sensitiveness, otherwise it is followed by prostration and shock. It must never be applied to throat with partially detached membrane, for reasons already seen. Solution of common salt, a drachm to the ounce, is much used, but as to frequency of application there is much difference of opinion. Has found best results by using only two or three times per day. On the other hand syringing of the nasal passages is always available, but here also gentle, lest ear be injured. Thirdly, we have spraying with borax, boracic acid, benzoate of sodium, carbolic acid, or potassic chlorate. This is not available for nasal passages, but is not irritating, hence not fatiguing. For destruction of membrane, when there is no need of haste the following is recommended as antiphlogistic and antiseptic of deeper and graver forms: acidi carbolici, ♏x; aquæ calcis, f℥iv. M. Sig.—Spray in throat several minutes every half-hour. This is good to prevent spread of disease to larynx. When rapidity of disintegration is required, liquor potassæ may be added. Inhalation of vapors containing turpentine, carbolic acid, oil of eucalyptus, or compound tincture of benzoin is also advantageous.

II.—MEDICINE.

Jaenborvitsch: Scarlatinal Uræmia in Children. (*Arch. f. Kinderh.*, viii. 2.)

Of all the theories which have been propagated to account for the existence of uræmia, the chemical theory, which was first advanced by Frerichs, is generally looked upon as the most probable. In its present, somewhat changed form, that theory accounts for all uræmic disturbances by an accumulation in the body of the different products of tissue-change, which are known as *extractive matters.* This proposition does not explain all uræmic phenomena, however, as the author proposes to show in certain cases which he details. He therefore considers it more correct to regard uræmia as a symptom which may be produced by a variety of causes. In regard to the opinions which have been expressed with reference to the origin of scarlatinal uræmia, the systematic writers upon pediatrics have given us nothing definite, nothing but discussions upon eclamptic convulsions; and a review of the literature of the subject by the author shows that their ideas are not at all harmonious. Five cases are narrated which came under the author's observation in which scarlatinal nephritis, with uræmic phenomena, was present. The review of these cases shows that the chemical theory will not account for their uræmic phenomena. In all of them the quantity of urine voided daily immediately before the uræmic attacks occurred was somewhat more than normal. As to specific gravity there was no deviation from the normal, so that poisoning of the organism could not be attributed to the accumulation of the constituent elements of urine. Traube's anatomical or mechanical theory is next tried as an explanation of the uræmic phenomena in the given cases. This theory rests upon the existence of hypertrophy in the left ventricle of the heart and an hydræmic condition of the blood. In all the cases autopsy revealed the presence of much fluid in the ventricles of the brain and œdema of the brain-substance, which in themselves were believed to be sufficient cause for death, but in none of the cases was the left ventricle of the heart hypertrophied: hence Traube's theory failed of application in this particular. In its second hypothesis, namely, that an hydræmic condition of the blood is, in connection with hypertrophy of the left ventricle, an essential prerequisite to uræmia, Traube's theory has been disproved by the experiments of Cohnheim and Lichtheim, in which no œdema followed the introduction into the blood of dogs of a six-tenths per cent. saline solution, equal in quantity to sixty or seventy per cent. of the weight of the animals. Traube's theory is therefore inapplicable as an explanation of the cause of uræmia or of œdema of the brain, which in the author's cases was evidently associated with uræmia. A clearer explanation of œdema of the brain has been furnished by recent experiments. From these experiments three principal reasons can be deduced for transudation from the blood-vessels in connection with different dropsical conditions: 1. A change in the normal chemical constitution of the blood.

2. A change in the walls of the capillaries. 3. A lessening in the velocity of the blood-current. In regard to the first of these,—that is, the change in the chemical constitution of the blood in connection with scarlet fever,—all the patients which are now under consideration had suffered from anæmia, scrofula, rachitis, etc., previous to the attack of scarlet fever, by which the blood became abnormal. It was made still more abnormal by the action of the scarlatinal poison and by the high temperature which accompanies the disease. Scarlatinal nephritis must produce additional blood-changes, and changes in the walls of the capillaries, due to the scarlatinal poison, must be yet an additional element of disturbance to the blood.

The second cause—that is, change in the walls of the capillaries—must also be the result of the scarlatinal poison and the high temperature, as well as of the abnormal chemical condition of the blood, and transudation must occur when this change has taken place. If the scarlatinal poison is not sufficiently intense to affect the muscular structure of the heart and the nerve-ganglia, it may still be sufficient, with the other conditions mentioned, to excite œdema in the face, the extremities, or elsewhere. Then, as the activity of the heart gradually becomes lessened, venous stasis, increased venous and diminished capillary pressure must follow, and finally change in the velocity of the blood-current. Finally, as the endothelium of the vessels, especially the capillaries of the brain, undergoes retrograde changes, the opportunities for transudation are improved, and, with an increase of œdema in other parts, we also get œdema of the brain and the well-known uræmic symptoms which result from it. In another series of cases in which scarlatinal uræmia is present, we have as an invariable symptom diminution in the quantity of urine voided, or even complete anuria. In such cases uræmia is due to retained products of tissue-change; but even in these cases uræmic phenomena do not invariably result, as is shown by many recorded cases. This fact strengthens the author in his belief that œdema of the brain is the final cause of death in scarlatinal uræmia, at least in many cases, and even in those in which anuria or a condition approximating that is present. In regard to the symptoms in scarlatinal uræmia, the attack may be sudden without any diminution in the quantity of urine voided, a series of convulsions announcing the condition; or it may come on slowly with prodromal headache, excitement, sleeplessness, or somnolence, and then a gradual diminution in the quantity of urine. Deafness and amblyopia, with or without structural changes in the visual apparatus, may follow. Epileptoid convulsions may come without any previous symptoms, or they may come a few days after those which have already been mentioned. They may be tonic or clonic, involve a few groups of muscles or the entire muscular system, and appear at regular or irregular intervals. Also there may or may not be loss of consciousness and sensibility, dilatation of the pupil and insensibility to light. Tonic and clonic spasms may alternate. In the severe cases consciousness remains in abeyance, the temperature remains high between the attacks, there are paralyses in different parts of the body, and finally death following coma.

Under the head of treatment, prophylaxis is of primary consideration. The urinary apparatus must be kept active, assisted by diaphoretics if necessary or by suitable cathartics. For high temperature approved antipyretics must be given. If in spite of all these precautionary measures uræmia occurs, the treatment must be active, but must be governed by the degree of strength which the child has retained, and especially by the condition of the heart. Therefore, if the child is strong enough and the pulse is full, blood must be abstracted, either by means of leeches applied to the forehead, the occiput, or the mastoid process, or by arterial or venous section. The quantity abstracted may be from one hundred and fifty to two hundred and fifty grammes. Cold should be applied to the head, and if the temperature is high, cold baths and counter-irritants may be used. With very weak children the foregoing treatment would be inappropriate. To them anæsthetics may be given, by inhalation, during the spasms, enemata containing each a drachm of chloral hydrate, or the carotids may be compressed for fifteen or twenty minutes, according to Trousseau's plan. Great attention should be paid to the diet in these cases, only nutritious and easily digested substances being given. If the anæmia is profound a suitable preparation of iron is indicated, and if there is a tendency to diarrhœa the solution of the sesquichloride of iron should be preferred. Great care should be used to prevent the child from taking cold, for should this occur the nephritis and uræmia might be repeated. A. F. C.

III.—SURGERY.

Magruder: Operations for Phimosis as a Means of Cure or Relief of some Nervous and other Symptoms. (*Journal of American Medical Asso.*, April 9, 1887.)

Phimosis and adherent prepuce give rise to varied troubles of more or less gravity, manifested either in muscular, osseous, or nervous systems, and removal of these abnormal conditions frequently affords marked relief and sometimes perfect and permanent cure. This opinion is justified by an experience of largely over one hundred cases, in the vast majority of which relief was obtained. Generally, circumcision and breaking down of adhesions were the only measures employed; occasionally tonics, as malt, cod-liver oil, and hypophosphites, and, in obstinate cases, electricity.

Has found phimosis or adhesions almost constant in a great variety of disorders: impaired locomotion due to atrophy, and manifested by weakness and stumbling; incontinence of urine; hip-joint disease; pain in voiding urine; talipes valgus or equino-varus, which he notes is rare in girls; headache and palpitation on least exertion; hernia; laryngismus stridulus; convulsions, restlessness, and irritability; in one case of child only six weeks old constant priapism with screaming and convulsions. These all in children of from one week to thirteen years.

This reflex spasm and paralysis is familiar to practitioner in diseases of digestive tract, ovaries, uterus, and urinary organs. Why not from genital irritation? Writer quotes in support of this observations of A. M. L. Hamilton, Henoch, and Erichsen. Experimental irritation of cutaneous nerves by varnish, etc., produces reflex paralysis of the centres of vascular innervation in cord. If this follows from irritation of cutaneous nerves, why not from irritation of the branches of pudic nerve? Drs. Otis, Seguin, Hammond, Black, and Sayre have associated preputial irritation with a variety of disorders. Barwell found phimosis in eighty-three out of one hundred cases of hip-joint disease, and elongated prepuce in eleven of the rest. In only six was the penis normal. He also notes that in a Jewish hospital very few such cases are reported in children. This is more than a coincidence. Says Erichsen, "Every child who has congenital phimosis ought to be circumcised, and even those who without it have long and lax prepuce would be greatly improved in cleanliness, health, and morals by the same operation."

Wheeler: A Case of Intubation of Larynx. (*N. Y. Medical Journal*, February 26, 1887.)

Case of membranous croup in child of three and a half years. Only twenty-four hours' standing. Respiration very labored and 48 per minute. Pulse 156. Child becoming cyanotic. Used an O'Dwyer's tube with immediate improvement and a change of respiration to 30 and pulse to 120. For fourteen hours the child was comfortable. Was suddenly seized with a fit of coughing and died immediately. The tube was found to be plugged with a piece of false membrane extending almost to the top and protruding one-fourth of an inch from its lower end. Writer considers intubation preferable to tracheotomy, especially in cases where the attendance is unskilled or careless, as there is less necessity for close attention.

Hunt: The Treatment of Foreign Bodies in the Nose. (*Glasgow Med. Journal*, March, 1887.)

The following rules are laid down:

1. In all cases of discharge from the nose (especially if fetid or unilateral) cleanse the cavities thoroughly by means of sprays, syringing, or forceps as a preliminary step.

2. Examine the nasal fossæ completely by means of a speculum and mirror. It is not sufficient to raise the tip of the nose with the thumb and look in. If no nasal speculum is at hand, extemporize one by bending a common hair-pin about an inch from its rounded end.

3. Having detected a foreign body, do not try to remove it by douching through the opposite nostril, as there is danger of the fluid entering the middle ear by the damming back of the current on the obstructed side. This is not a theoretical objection.

4. Where the foreign body presents a sharp edge, extraction is best managed by forceps. A rounded body, especially when covered by mucus, will probably slip from the grasp of the forceps; it is best removed by passing a bent probe or scoop behind it and dragging it forward. The above rules apply equally well to the removal of bodies recently introduced.

The skilful use of the forceps or probe is even less objectionable than the "pinch of snuff" treatment.

Cocaine is of great value, not only in producing local anæsthesia, but in contracting the spongy tissue over the turbinated bones, facilitating thus examination and extraction.

Lane: Intussusception caused by a Tumor growing from Mucous Membrane of Transverse Colon. (*Lancet*, April 9, 1887.)

After an attack of diarrhœa, a tumor as large as a walnut projected from the anus. It was congested, and blood oozed from its surface. It seemed to have a long pedicle extending beyond the finger's reach. There were no symptoms of strangulation; it was pushed back into the gut. The following day a tumor could be felt in the median line between the umbilicus and the symphysis.

Some days later the tumor was again extruded from the anus. It was now found to be attached to the congested mucous membrane by a constricted neck, the prolapse of the gut being abundant and lax, so that what seemed in the first instance to be a pedicle was really the mucous membrane of the intestine to which it was attached.

The tumor was now removed, and the intestine could be then readily reduced with the finger. No intussusception tumor in the abdomen.

Mr. Treves stated in the discussion that five per cent. of the cases of intussusception were due to polypi.

Pollard: Ununited Fracture of the Clavicle in an Infant; Resection and Wiring of Fragments; Good Union. (*Brit. Med. Journal,* March 23, 1887.)

The fracture occurred about four months before the case came under observation. As the child, then eleven months old, was at the time in poor health, nothing was done for the injury.

The operation of resection and wiring was done under antiseptic precautions, and good union was obtained. The wire came away on the twenty-fourth day, and three weeks later the parts were soundly healed, and the arm could be used freely.

Congenital Occlusion of the Pharynx. (*Lancet,* April 9, 1887.)

An account is given of a case reported by a Spanish practitioner, Don Illera, in which a newly-born child could not be taught to suck, and whose mouth, on the introduction of the finger, grasped it like a ring. The middle third and edges of the tongue were found to be connected to the superior alveoli by firm adhesions, which prevented the organ from being depressed. Two small tumors besides were situated on the palate, near the arch, which so effectually occluded the passage as to make the swallowing of liquids almost impossible. No operation was allowed until the fourth or fifth day, when the child seemed likely to succumb from sheer inanition.

The tumors were seized by the forceps and cut off at their bases, and the bleeding surfaces touched with the actual cautery. The adhesions of the tongue were then divided, and in a few hours the child could swallow milk easily. It ultimately attained complete use of the tongue.

Davidson: Cure of a Spina Bifida by a New Method, after Rupture of the Sac. (*Glasgow Med. Journal,* February, 1887.)

The tumor occupied the lumbar region and projected about three-fourths of an inch above the general surface. No nerve-fibres could be detected in the sac. Despite the greatest care, rupture took place on the third day after birth. When the child was quiet the fluid merely oozed forth, but during crying or any straining efforts it welled up from the wound.

After this had gone on for a week without any sign of cessation, a piece of sponge prepared in the following manner was inserted between the lips of the wound well into the cavity.

It was soaked in dilute hydrochloric acid, and a thin shaving of it, about the thickness of a half-dollar, was taken and its edges trimmed so as exactly to fit the wound. After being soaked in one-fortieth solution of carbolic acid it was introduced in the manner described. It was covered first with a piece of protective silk and then with adhesive plaster.

In three days granulations were seen extending into the sponge from each side and a mere trace of fluid was escaping. In a week the sponge was covered by granulations, and in a few days more the wound was completely healed.

The case was seen again when eight or nine months of age, in good health.

Czerny: Remarks on the Operative Treatment of Intestinal Incarceration. (*Arch. f. Kinderh.* [abstracted], viii. 2.)

The case which formed the basis of the author's paper was one of internal incarceration, occurring in a boy fourteen years of age. The patient suffered frequently from diarrhœa, and occasionally from severe colic. One day, after eating heartily, he was seized with violent colic-like pains, constipation, and such decided tympanitis that his attending physicians made a diagnosis of peritonitis from perforation, and gave, as their prognosis, a fatal result. On the fourth day of his illness he was seen by the author, who was unable to make a diagnosis of circumscribed peritonitis, and, as the patient had survived until that time, his opinion was that the condition was probably internal incarceration. He decided to make an intestinal fistula in accordance with Nélaton's plan. After the abdominal cavity was opened, a dessertspoonful of dark serum flowed out, and a moderately tense loop of intestine presented itself covered with a thin layer of fibrinous material. The intestine was secured to the abdominal wound and opened, and on the following day, by the aid of a gum-elastic catheter, a quantity of soft fæcal matter was removed through the intestinal wound. A short time afterwards spontaneous fæcal evacuations occurred by the natural passage, while from the fistula there was a discharge of grayish-yellow matter. The boy recovered slowly, the attacks of pain and diarrhœa disappeared, and nine months subsequently the fistula was closed. In connection with this case the author observed that when there is intestinal obstruction, the question of forming an artificial anus must be considered as soon as the abdomen is swollen like a drum and the nature of the obstruction is a matter of doubt. This operation is to be unconditionally preferred to the ordinary form of laparotomy, and in doing it, after the peritoneum has been opened, one must be particular to attach its cut edge to the cut edge of the skin by means of a few silk catgut sutures. Then the nearest distended loop of intestine is to be seized with a tenaculum, or other suitable instrument, drawn into the abdominal wound and secured to its edges with a large number of button-sutures. A broad, but strongly curved, needle with a fine point should be used, and either silk or catgut for sutures. Then a small opening should be made into the intestine, and the wound irrigated with a solution of salicylic acid or sublimate. After the contents of the intestine have ceased to flow through the opening, the intestine must be further secured to the abdominal wall with silver sutures, and the ends of the mucous membrane brought into contact with the cut edges of the skin, so as to form lips to the opening. The operation is so simple and so nearly painless that it can be done by any physician, and almost without the use of an anæsthetic.

A. F. C.

Kümmel: Laparotomy in connection with Intestinal Strangulation. (*Arch. f. Kinderh.* [abstracted], viii. 2.)

Five cases are reported in which laparotomy was performed on account of intestinal strangulation. There was but one recovery, but in all the cases the operation was deferred too long. In one of the cases perforation had already occurred, in the others there was gangrene combined with peritonitis, so that after resection of the gut he was compelled to make an artificial anus. The author pleads for the performance of the operation as soon as the diagnosis is clearly established, and before the occurrence of collapse. The plan of washing out the stomach, which has been advised for this condition, is disapproved, for it causes a delay at the most favorable time for doing the operation, in exchange for a temporary relief. The laparotomy is performed under antiseptic precautions, without laying too much stress upon the diagnosis of obstruction which has been made. The operation is to be performed as rapidly is possible, the incision extending from the symphysis to the ensiform cartilage. The intestines must be covered with warm cloths, and the obstruction be sought for and remedied; then the intestines must be replaced and the wound closed. If collapse has taken place before the operation is performed, an artificial anus must be made through as small an incision as possible. In four of the author's cases the patients were already in collapse before he began to operate, and they did not come out of that state. This paper was discussed by the Hamburg Medical Society, the following opinions being expressed.

Curschmann did not doubt that the chances of recovery were much better after an early operation, but thought it very difficult to make an early diagnosis of obstruction, as to its variety and as to the probability of eventual recovery without an operation. The great danger which always attends an operation must also be considered. Of thirty-five cases which he had seen, five had been cured by absolute abstinence from food and by the proper use of opium. He was opposed to the use of forcible injections for intestinal obstruction.

Bülen had had six cures in an experience of seventeen cases.

Cohen had had thirteen recoveries out of fourteen cases.

Lauenstein had had a fatal result in a case in which the stomach was washed out, the patient being in collapse at the time. He agreed with Kümmel's propositions in the main, but thought the prognosis after laparotomy was usually very bad, and that there was often great difficulty in replacing the intestines, on account of their dilatation, the difficulty being relieved only by their puncture.

Fränkel found it very difficult to locate the obstruction even at an autopsy.

Benjamin observed that if an operation were done too soon and no obstruction were found, the patient must still undergo the dangers attendant upon the operation. Laparotomy should be reserved for those cases in which a tumor can plainly be felt, or if a tumor cannot be made out and an operation is indicated, an artificial anus should be the end of that operation. Kümmel in concluding said he had never seen a case of ileus get well without an operation, and in those which are said to get well spontaneously the diagnosis cannot be confirmed.

A. F. C.

Busch: The Origin of Erosions on the Crowns of Teeth. (*Arch. f. Kinderh.* [abstracted], viii. 2.)

As a result of his experience, the author believes that defects in the enamel of the teeth, which are commonly known as erosions, are due to certain laws, not only with reference to their localization upon the crown, but also with reference to their occurrence upon particular teeth in the set. These furrows and depressions affect only the superficial portion of the crown, while the part which is near the root may always retain its normal consistency. These erosions never affect a single tooth or several teeth without any regard to position or other conditions, but always affect, in any given case, those which are developed in the jaw at the same period, and hence those groups are most frequently and most decidedly affected whose crowns develop earliest. The first molar stands foremost in the list, its crown being partly developed as early as the time of birth. The incisors and canines come next, their crowns developing during the first few months of life. The bicuspids are seldom eroded, their crowns developing, for the first, at the end of the second year of life, for the second, a year later. The last two molars, the crown of the first of which begins to develop at the end of the fourth year, and the second between the eighth and ninth years, are always free from erosions. The milk-teeth may be of irregular form and bad structure, but they never show the peculiarity of the erosion. Hutchinson's assumption that erosions are attributable to syphilis is considered unwarranted, as otherwise they should appear upon the milk-teeth. That assumption also leaves unexplained the fact that the erosions appear upon particular groups of teeth, as has been already stated. They are also absent in many cases of undoubted hereditary syphilis, and present in many individuals in which no trace of hereditary syphilis is discoverable. In hereditary syphilis, rachitis, and scrofula, the milk-teeth are apt to be soft and friable, but the erosions of the permanent teeth cannot be explained as peculiarities of those diseases. The author believes that they are the result of disease which affects the individual at the time that the crowns are beginning to develop. Among the diseases which may have such an influence eclampsia, meningitis, and severe attacks of choking in consequence of whooping-cough (for example) are mentioned. A single severe attack of convulsions in the first year of life might be sufficient to produce erosions on the teeth, the crowns of which were developing at that time. The theory is that the disease would cause a temporary suspension of the growth of the tooth, that it would soon begin again to grow vigorously, but that the interval would be marked by a furrow or erosion. After the first year of life cerebral disorders are much less frequent, and hence the infrequency of erosions upon teeth which are developed after that time. As erosions are believed to be so frequently caused by convulsive conditions, the author suggests the propriety of speaking of *teeth convulsions*. From one to two per cent. of all human beings have erosions on the teeth. A tendency to caries is manifest when they are present. A. F. C.

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DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,
AND
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(Continued from May Number.)

MYOCARDITIS.

MYOCARDITIS, or carditis, is an inflammation of the walls of the heart, and usually is a concomitant of endo- or pericarditis, the continuity of structure permitting an extension of the inflammation from the endocardium to the subendocardium and intermuscular connective tissue, or, on the other hand, may be an extension inwards from a primary pericardial focus of inflammation. In some instances the process undoubtedly has its primary seat in the muscular tissue itself.

Dietrich and Friedrich are of the opinion that youth predisposes to this affection, and cite as proof the eighteen cases of carditis recorded by Valex, six of which were children. In Bernheim's forty-six cases of myocarditis, twelve were between eight and twenty years. If we are to consider as myocarditis all those cases of softening or hardening, perforation of the septum, and partial, acute, or chronic aneurism that are in infants more than at any other age of life the result of direct

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inflammatory lesion of the muscular tissue of the heart, we can but agree with Dietrich and Friedrich, or even go further and say that the embryo and infant present the most favorable subjects for this disease. We may recognize two forms of the disease,—*indurative*, either local or general, and *purulent*. The indurative form may be further subdivided into the *acute* or *chronic*, either of which may occur during uterine life. In both the indurative and purulent forms leucocytes are infiltrated in the wall of the heart; the former, the indurative, causes thickening and hardening, which may occur in bands or patches of fibrous tissue. The endocardium is apt to show similar changes due to connective-tissue proliferation. Ziegler says that not infrequently some of the muscular trabeculæ are transformed into fibrous cords, and that the new fibrous tissue, when fully developed, is dense and almost free from cells; if the inflammatory process is kept up it may still contain infiltrated leucocytes in some spots. The muscular cells in many places may disappear; in other places, especially near the periphery, they remain, but show evident signs of atrophy. When the inflammation is more recent the tissue is grayer or more reddish, and richer in cells and vessels. At first nothing is seen but an infiltration of small cells, amid which the muscle-cells appear in various stages of disintegration, and sometimes hemorrhage occurs. The disintegrating muscle-cells are not afterwards replaced. If these sclerotic patches are large they seriously affect the heart. This hardened tissue is unable to dilate and contract with the rhythmic action of the heart; in its earlier stages the blood-pressure may cause bulging, and thus set on foot the changes which will ultimately terminate in a cardiac aneurism. Rokitansky reports such a case in a child aged nine. The connective tissue may constrict a portion of the cardiac wall and cause it to project within the auricular or ventricular cavity as a pedunculated fibroid polyp.

The production of cicatricial tissue may also have a serious tendency, as its contraction may cause valvular disease; two such cases are reported by Lösner showing rupture of the septum following endo- and myocarditis. This occurred in a poorly developed and cachectic child aged four, who was taken sick with scarlatina. The chest examination revealed the presence of a pleural effusion with bulging; on the left side near the præcordia was heard a friction fremitus. Heart-beats were violent; auscultation over centre of right ventricle revealed a prolonged and well-marked presystolic bruit. No signs over the left ventricle or aortic region.

Autopsy.—Acute endocarditis localized in the left ventricle. Thickening of the endocardium, especially at the mitral and aortic valve. At the aortic region and just below the orifice was found a communication between the two ventricles, which opened in the right ventricle beneath the tricuspid valve. The opening was cicatricial and hard.

The other case was also aged four. The child presented a systolic and diastolic murmur.

Autopsy.—Tubercles of lungs and glands; in the left ventricle the endocardium was thickened; at the mitral orifice an opening was seen beneath the aorta, which opened in the right ventricle beneath the tricuspid valve. These two cases probably had their death accelerated by the occurrence of scarlatina, as the communications had probably long existed and may have been congenital.

Ziegler pursues the subject somewhat further, and describes *myomalacia cordis* as a peculiar softening of the heart due to arterial anæmia, the usual cause of this anæmia being sclerosis of the nutrient arteries of the heart, or the coronary arteries and their branches. It has been noted to have arisen after coronary embolism. This softening may be very slight, or so extensive as to include almost the entire thickness of the heart-wall, rupture of the heart resulting, the blood escaping into the pericardial sac and death rapidly closing the scene.

Clinicians have most usually confounded myomalacia cordis with myocarditis, or fatty degeneration, but Ziegler concludes that the affection is really anæmic necrosis, but that fatty change and inflammation do at times accompany it, but not as a chief or primary condition. He compares this cardiac softening with cerebral softening, or encephalomalacia.

Purulent myocarditis has already been referred to while considering ulcerative endocarditis. This condition is usually seen in connection with pyæmia, and is due to bacteria deposited in the heart-muscle from the blood-current. One or many small, grayish-yellow abscesses may form and rupture either internally or into the pericardium. Leyden[*] says that diphtheria often causes myocarditis without an attendant endocarditis, and that myocarditis may be seen in association with variola, epidemic meningitis, and relapsing fever.

Rosenbach[†] has recorded granular and waxy degeneration of the heart-muscle in conjunction with diphtheria. Blache records the following case: a child, aged thirteen, was attacked by acute articular rheumatism twice within a year, and developed an aortic murmur. A year later it died, and the heart, on post-mortem examination, was hypertrophied, with thick and rigid walls. On the right side were noted disseminated spots of inflammation throughout the muscle. The left ventricular muscle was inflamed and transformed into fibroid tissue; it was hard, resisting, and bleached-looking, not unlike cicatricial tissue. Here it was supposed that the myocarditis was the primary affection and the endocarditis and valvular disease secondary. The myocarditis was probably due to infarcts, as atheroma is rare at this age. Paul also notes the association of myocarditis with typhoid fever and rheumatism, and remarks that the selective sites of myocarditis in their order of frequency are first the apex of the left ventricle, then the base, posteriorly near the aortic valves, then the septum near the base, and more rarely the papillary muscles and fibres of the right ventricle.

Rokitansky believes that the wall of the left ventricle is the most frequent seat; Dietrich, the septum, thus explaining the cases of patulous septum. It is sometimes, however, difficult to say whether these fistulous tracts are congenital or acquired.

Blache classifies as follows the diseases with which myocarditis may be associated:

- General diseases.
  - General illness.
  - Grave fevers—variola.
  - Cachexiæ.
- Local causes.
  - Diseases of pericardium.
  - “ endocardium.
  - “ vessels of heart.
  - Abscess or tumors of heart.

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[*] Zeitschr. f. Klin. Med., iv., Ziegler.

[†] Virch. Arch., vol. lxxix.

Alteration in circulation.	Embolism. Thrombosis. Atheroma. Œdema.

Symptoms.—The symptoms of myocarditis depend, of course, on its form and the extent to which the disease has progressed. When the lesion is small and limited, few, if any, symptoms exist at all by which a clinical diagnosis can be made. If, however, the lesion is extensive, then we meet those symptoms which we all recognize as characteristic of heart-disease, as dyspnœa; palpitation, dropsy, visceral derangement, or præcordial discomfort; nervous symptoms are peculiarly liable to arise early in these cases. Friedrich cites such a case, in which the nervous symptoms were so severe in a child aged eight that the disease was alone discovered at the autopsy, when an abscess was found between the auricle and the right ventricle. Rarely do we meet a murmur, and when it does arise it is in all probability due to infiltration and thickening of one or more chordæ tendineæ, thus interfering with their normal action.

Most cases of myocarditis pursue a long course; should, however, an aneurism develop, the case will be more rapid. In other cases sudden death may occur from cardiac arrest. The most usual termination is, however, by dropsies, pulmonary complications, or by exhaustion.

Traumatism may cause myocarditis and rapidly prove fatal. A case is recorded of a child aged twelve who was kicked over the heart and died shortly afterwards, with abscesses in the heart-muscle.

The *diagnosis* is indeed difficult, and in many cases quite impossible; this is particularly true of the so-called cerebral form of myocarditis, which is especially noticeable during early life. Burnheim reports several cases in children. A child aged twelve, with febrile symptoms, delirium, agitation, and dilated pupils, died four days after admission. Child never had a pain in the chest, or heart-irregularity, or cardiac palpitation. At the post-mortem the heart was of a deep red color, softened, and easily torn; in the walls of both ventricles a number of abscesses were found, with quite a number beneath the visceral layer of the pericardium; auricular muscle softened. Heart-clots were numerous. It is a clinical nicety to differentiate between cases of subacute or chronic myocarditis and the heart that accompanies emphysema, or that seen with renal disease, or again, the heart that is altered by fatty degeneration.

As a further illustration of the difficulty in diagnosis we cite the case of a child aged six, seen by Labric. The child had a left-sided pleurisy, and died soon after the effusion had formed.

Autopsy.—Pleura thickened and covered by false membrane. The pericardium was distended with seropurulent fluid and false membrane around the entire heart. The heart-muscle was softened, pale, and in patches discolored; near the pericardium the muscle was infiltrated with embryonic cells; the pericarditis evidently had caused the inflammation to extend to the myocardium. The endocardium was found to be hyperæmic, and at the valves the early stages of endocarditis could be noted.

Prognosis.—If we are able to make the diagnosis the prognosis is unfavorable, because cases which are far enough advanced to diagnose are almost in the last and fatal stage of the disease.

Treatment.—It is hardly necessary to add that treatment is of little avail. Should the patient present evidence of syphilis, either hereditary or acquired, iodide of potassium may be administered in moderately large doses. In some cases, independently of any specific action, the drug seems to be of benefit. Trinitrin (nitroglycerin) and adonidine may also prove efficacious. Digitalis is to be exhibited with the greatest care and caution. Rest, regimen, and supporting measures directed to the general well being of the individual about complete the plan of treatment.

TUMORS, NEW GROWTHS, AND PARASITES OF THE HEART.

The heart-muscle, as we noted in cases of myocarditis, may undergo a sclerosis. This sclerotic change has been noted to be so localized that the term *fibroma* could with propriety be applied to it. A fibroma as large as an English walnut has been remarked in the thickness of the left ventricle of a boy aged six years by Luschka,* and Wagstaffe,† in a girl of three months, noted a fibroma situated within the septum and filling the greater part of the cavities of the heart.

Myomata, or muscular tumors of the heart, may not infrequently be noted. They are almost always congenital. Virchow ‡ and Recklinghausen§ have recorded several instances of this new growth. The following true tumors may also invade the heart primarily, but they are rare: sarcoma, lipoma, and myxoma.

Tubercles in acute miliary tuberculosis may be deposited in the heart. On very rare occasions we may find cheesy masses, the result of chronic tuberculosis of surrounding organs; almost invariably are they secondary to caseous nodules in the pericardium.

Secondary carcinomata is probably the most frequent new growth of the heart; *syphiloma* is more rare; gummata are extremely rare; when they occur they will be found in the myocardium, imbedded in dense hyperplastic fibrous tissue; if they are recent, will appear as soft grayish-red patches; if older, as a dry, yellowish, cheesy node.

B. Teisser ‖ records an interesting case of cardiac syphilis in a young prostitute, who was in the third year of syphilis, which, however, had only manifested itself in the form of buccal mucous patches. She was suddenly seized with dyspnœa, followed by asphyxia and death within twenty-four hours. The autopsy showed extensive involvement of the anterior walls of the right ventricle in its upper half, the muscular tissue of which seemed to have become entirely transformed. The thickness of the cardiac wall appeared about normal, but it seemed of a peculiar light-gray color, and its consistence much firmer. Section showed numerous milk-white lentil-sized nodules, both in the cardiac walls and elsewhere. These presented a caseous appearance, but were in reality of quite firm consistence, showing no trace of softening even in the centre.

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* Virch. Arch., Bd. viii. † Trans. Path. Soc., xii., p. 121, 1871.

‡ Virch. Arch., Bd. xv., xxx.

§ Myoma cordis.—*Monatschr. f. Geburtsk.*, Bd. xx., 1862.

‖ Annals de Derm. et de Syph., 2me sér., t. iii., No. 6; Gaillard's M. J., March 17, 1883.

In addition to the interstitial myocarditis and the gummatous deposits, there were considerable vascular alterations in the form of peri-arteritis and endo-arteritis.

Ziegler remarks that simple inflammatory indurations of the heart-muscle occur as a consequence of congenital syphilis, and that this condition is much more common than are gummata.

Calcification of certain parts of the heart near the valves is not infrequently noted. At times concretions may be found in an abscess of the myocardium which has been absorbed.

Parasites.—Cysticercus, echinococcus, and trichinæ are found in the heart. According to Cobbold, 3.5 per cent. of all cases of hydatids in man occur in the heart.

Heart-clot will be considered in a special chapter.

(To be continued.)

PATHOLOGY AND THERAPY OF WHOOPING-COUGH.*

BY PROFESSOR VOGEL,
Of Munich,
AND
PROFESSOR HAGENBACH,
Of Basel.

REPORTED BY E. S. McKEE, M.D.

PROFESSOR VOGEL spoke first on the pathology.

The epidemic appearance of this disease tends to place it in the list of infectious diseases. Unity on this subject has, however, not yet been reached in the profession. Gerhardt holds that it is between cholera and cerebro-spinal meningitis. Strumpell, in his text-books, places it between bronchitis and bronchiectasis. A specific dividing fungus has not, so far, been found. The fungus of Letzerich and others is not recognized. The author hopes that with better means of investigation we may yet be able to find an infecting fungus. In earlier times they were enabled to fix on a pathology of pertussis from the symptoms exhibited, so we can imagine from the vomiting that the situation of this disease lies in the stomach. In this century the spasmodic coughing is put in the foreground, and the disease considered as a neurosis which affects the vagus and phrenic nerves. In support of its nervous character we are reminded that children can bring on these spasmodic attacks through imitation, and that whooping-cough is much more frequent in the female sex. After the neurotic period came the time when it was considered a bronchial catarrh, which theory had as supporters Oppalzer, Leuschner, and others. To-day we must look upon it as an infectious disease. Linne was right one hundred and fifty years ago when he said the cause of whooping-cough was a *contagium animatum.*

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* Read before the German Congress of Internal Medicine at Wiesbaden, April, 1887.

Of new works and reports the most important are those of Von Herff. Being attacked by the disease himself, he was able with the laryngoscope to see the action of the larynx. He found the entire larynx and trachea in a catarrhal condition, especially the posterior wall. In a spasm of coughing a very small flake of mucus would appear as the cause of the attack. By hawking, Von Herff could remove the flake of mucus and the spasm remained absent. On sounding he found the greatest irritability in the interarytenoid region and on the under part of the glottis. The predecessors of Von Herff, Beau, Rehn, Meyer-Hüni, and Rossbach, attained other results. Rehn found the anterior wall of the larynx particularly affected. Meyer-Hüni agreed with Von Herff that the posterior wall was the seat of the infection. He also saw the flake of mucus. Rossbach saw nothing characteristic; he only observed balls of mucus come out of the trachea during attacks. From these examinations we may conclude the symptoms in the larynx are inconstant and of small importance. On this account we dare not promise too much from laryngoscopy. It is quite probable the conditions vary in different epidemics. The pathological anatomy of whooping-cough has not been enriched recently. A Parisian pathologist found pneumonia present, and under the microscope bacilli and diplococci imbedded in pus-cells. These were probably the same that Friedland saw. In relation to the complications, Marshall found aphasia after whooping-cough, and in one case cerebral hemorrhage. Wagner treated a five-year-old patient, who had general hemorrhage and hæmaturia; the hemorrhage continued, partly accompanied with brain-troubles, for three years. An otologist found deafness as a sequence to whooping-cough. Measles often occurs coincidently, but both diseases are so frequent that this coincidence appears only accidental. In reference to prognosis, we can say there is no disease in which the question of age is of so much importance. In an epidemic at Würzburg, of those children who were under one year, twenty-five per cent. died; between one and five years, 4.8 per cent.; over five years, 1.1 per cent.

In view of the fact that older children give a much more favorable prognosis, there is too little consideration given certain remedies. The time of the commencement of the treatment is generally not reported when an author wishes to praise a remedy. This is of great importance; it must be used from the beginning, and it must be proved whether it shortens the course of the disease from the usual six weeks.

He next considered the therapy.

The remedies which come under consideration are those which act either antispasmodically or as disinfectants. He who uses narcotics renounces the hope of shortening the disease and only expects to make it more mild and induce sleep. With opium it is possible to give child and friends much-needed rest at night; chloral and belladonna are recommended for the same purpose. Hamar uses a compound of belladonna and cannabis indica, and reports eighty-three favorable results out of one hundred and sixteen cases. In thirty cases the cure occurred in eight to fourteen days. Prior has recently used cocaine locally on the laryngeal mucous membrane. After painting the parts with a ten- to twenty-per-cent. solution of cocaine the attacks were less frequent and improvement soon took place. Cocaine, however, is not a remedy without faults.

The antiseptic treatment aspires to shortening, and when possible cutting off, the disease. The plan of placing the patient in a gas-factory has been recommended for some years. The reporter had tried it, but several difficulties stand in the way of a generalization of this remedy. These days we vaporize benzine and carbolic acid in the sick-room. Peck, of Coblentz, recommends an inhalation mask in which is placed a ball of cotton with concentrated carbolic acid; this plan of treatment will be so firmly resisted by children as to render it useless. Quinine and recently antipyrin have been given for this disease. The reporter gives five to ten milligrammes of calomel to children under one year, and thinks he has thereby warded off complications. Of late calomel has attained a reputation as an antiseptic remedy, and its favorable action can also be explained on this line. Many therapeutists believe much in disinfection of the sleeping-apartments; Mohn burns twenty-five grammes of sulphur to each centimetre of space.

In closing, the author recommended the well-known method of Michael, of Hamburg, who blows remedies into the posterior and naso-pharyngeal cavity. His remedies are resin of benzine, sulphate of quinia, and nitrate of silver in a ten-per-cent. solution with tallow. Lubruski, Stork, and Ziem have treated patients in a similar way. Michael's success was brilliant in seventy-five cases, twenty-five were without result.

We now hear little concerning the psychical treatment which was formerly considered of advantage. Fortunately for the little patients, no imitators have been found for the example of the wife of the old Prussian officer who treated her children suffering from the whooping-cough with the rod.

The author closed with the South German proverb which he had found to be true,—viz., "The whooping-cough lasts till it stops."

Dr. Hagenbach, of Basel, next read on the same subject. He found our knowledge of the pathology of whooping-cough to be defective and contradictory. For himself he had come to the conclusion that it was a true infectious disease, yet the question always presented itself, Is it a general infection or only a local one? Is the situation of the infectious body to be sought in the nose, larynx, or the bronchial tubes? On account of this uncertainty, up to the present time there is no firm basis of therapy. He gave these statistics: according to

Uffelmann, two hundred and forty thousand children yearly contract the disease in Germany. In Basel, from 1812–1872 whooping-cough was next to typhus and diphtheria in its demands for sacrifices. Out of one thousand deaths in Basel, twelve are caused by whooping-cough. In England twenty-two, in London alone thirty-six. The mortality statistics bring into prominent view the fact that the younger the child the greater the danger from whooping-cough. The complications also, especially those of the lungs, occur much oftener in the tender years. He considers it an infectious disease which occurs epidemically, is endemic in large cities, and the infectious material is communicable. The circumstance that having had the disease once guards against future contraction speaks for a general infection. The localization of the poison to certain parts of the respiratory mucous membrane and the usual absence of fever speak for the local infection.

Rossbach, Rehn, Meyer-Hüni, and Von Herff have published the most important results of late. From the most recent of these it appears the laryngeal catarrh cannot be credited with the important rôle it has thus far held. According to Von Herff and Meyer-Hüni, the spasmodic attack originates from a deep point on the posterior laryngeal wall. Rossbach also considers the catarrh of the bronchiæ as important, at the same time he believes in a reflex neurosis, in which the cough centre is irritated by a specific virus. Others, for instance, Baginsky, considered it to be more of an infectious catarrh. The nasal theory has found many followers of late. Sommerbrodt, following Hack, who first introduced the treatment, has cauterized the corpus spongiosi nasi of children suffering from whooping-cough. Michael, of Hamburg, considers it a reflex neurosis and treats it locally. We have always believed the fungus will be found in the sputum. The different organisms found so far have led to no conclusion. Efforts to communicate it to rabbits have not been followed by success.

Does the sputum in general contain the fungus? We know the susceptibility to the poison is a general one. It is found in the first year of life, though rarely in the first months. Children are mostly exposed until the tenth year. From this time on the per cent. of the cases is less and less. The disease is contagious in the first and second stages, generally so long as mucus is produced and the child coughs. The latter is probably too comprehensive, as some children cough long in consequence of complications, the disease having entirely discontinued. The contagium appears able to live outside the human body but a short time. Carrying by means of other persons does not often happen, while this is well known to frequently occur in scarlet fever. The children are isolated only so far as to keep them from healthy children.

Prophylaxis is not practised as it should be. The kindergartens are to be watched with the greatest care. They form the nests for the plague, more so than public schools because less under control. Schools should be closed and thorough disinfection practised. The author considered the ordinary plan of a change of air bad practice; while it may be good for the child in question, it has the tendency to spread the disease.

Treatment includes the recommendation of a large number of remedies and plans, which places us on the same ground where we were twenty years ago.

Our treatment, therefore, can only be one of empiricism. So great is the number of means of cure that it makes the therapeutist sceptical from the start. The general hygienic treatment is of importance, and above all is to be urged the plentiful supply of good air. One must take into consideration the climatic and meteorological relations; especially should this be done in the care of young children. As to the question whether the room should be damp or dry, the author decided in favor of dampness. He thought the good results obtained from hanging cloths wet in carbolic acid about the room are probably due to the dampened atmosphere.

Among remedies the narcotics and anæsthetics formerly played a prominent part, and still continue so to do. Indeed, no remedy of this group remains unemployed. It is remarkable in this day how little we hear of opium and its derivations, though they are used often enough. Henoch recommends morphia especially for relieving the urgent symptoms. The author was favorable to this medicine, which shortened the troublesome night and weakened the attacks, and rendered them less frequent. In France the medicine recommended by Trousseau, belladonna, is used most frequently. The bromides are given internally and for inhalation. The author used bromide of potassium in connection with chloral. Gerhardt advised a four-per-cent. solution of bromide of potassium with chloral for inhalation. Lorenz and Heubner had good results in shortening the attacks by the use of chloral in doses of seven and a half to fifteen grains. The latter used it in the evening as an injection. Next to opium the author had obtained the most benefit from the chloral with bromide of potassium. Cocaine has been recommended for two years past, especially by Prior. The reporter had found no particular result from painting the parts with a five-per-cent. solution of cocaine. Ether applied along the course of the vagus by means of the atomizer is recommended, and also nitrate of amyl. Recently the antiseptic remedies are highly spoken of. Preparations of quinine act against the general infection. Gives sulphate of quinine or tannate of quinine. He considers quinine a good medicine, which lightens the attacks and shortens the disease. The tannate of quinine made by Zimmer is much used in Basel. It must, however, often give place to other remedies. In Heubner's critical work quinine is made secondary to belladonna. Carbolic acid is often used by means of cloths dampened in it and hung in the room. Also acid benzoate of soda has its followers. Calomel internally and gray ointment externally are highly praised. Letzerich first practised local applications, and in many cases had success with insufflation of quinine; no attacks occurred for a long time after the insufflation. Perhaps the quiet came from reaction after the severe irritation of the sensitive nerve-filaments from the insufflation. Painting with solution of quinine is also advised. Hopes are cherished from resorcin, in two-per-cent. solution, still more from salicylate of soda. Heubner has found favorable action from inhalation of salicylin. Of the astringent remedies, Mayer praises nitrate of silver and alum as anticatarrhal remedies. Michael, of Hamburg, insufflates resin of benzoin with surprising success. In France boric acid mixed with roasted coffee is insufflated.

For a further solution of unanswered questions we must look to bacteriology and laryngoscopy to obtain a firm basis of treatment.

Dr. Michael, of Hamburg, in the discussion which followed strongly recommended the insufflation of disinfectants in the nose; he had thus treated successfully seventy-five cases out of one hundred. The treatment had proven most beneficial in those cases which had already passed the six weeks or were just in the beginning. In those patients where every action of the inhalation remained absent in the first few days, he was obliged to resort to other remedies.

Prof. Heubner, of Leipsic, believed that all those remedies enumerated in his critical work had little favorable effect on the disease. There was in his opinion no single rule, as the severity of the attacks as well as the duration of whooping-cough depended on individual surroundings. We must consider the number of the attacks. By this and the duration of the disease we can know whether we have done good or not.

Dr. Prior, of Bonn, called attention to the fact that the inspiratory stenotic bruit can be entirely absent in pertussis. There is at present an epidemic in Bonn, where this is absent in the majority of the cases. It is, therefore, not always proper to consider this as a characteristic and diagnostic symptom.

Dr. Schliep, of Baden Baden, treated his own child in the pneumatic cabinet. After twelve sittings the attacks disappeared. The disease, however, returned in fourteen days, and a few more sittings were required to complete the cure. He thought fifteen to twenty sittings necessary, and considered the action mechanical, in that it chemically changed the hyperæmia of the mucous membrane in consequence of the increased inhalation of oxygen. He had also used inhalations of a four-per-cent. solution of sulphur.

Dr. Sonneberg, of Worms, referred to his report in the *Deutsche Med. Wochenschrift,* where he used antipyrin with success.

Dr. Cohen, of Hanover, called attention to the good effects attained by the inhalation of bromide of potassium and the use of the musk preparations.

VACCINATION.

BY WILLIAM T. PLANT, M.D.,

Professor of Pediatrics in Syracuse University, Syracuse, New York.

GENTLEMEN:—Some time ago I gave you an account of the life of Edward Jenner and his great work, the most beneficent, without a doubt, of human achievements. This morning we are to consider the more practical questions connected with vaccination. If you reflect that nearly all over the world it is customary to vaccinate all children, and that this duty belongs to medical men, you will realize that your knowledge of the subject cannot be too voluminous or exact.

NATURE OF VACCINIA.

Vaccination is the conveyance of cowpox, or kinepox, or vaccinia, for it has all these names, from the animal to man, or from one person to another. What is cowpox, and whence does it derive its royal power over smallpox? Jenner regarded the two diseases as essentially the same. In 1801, only three years after the great discovery was promulgated, Gassner, of Günsberg, inoculated some cows with smallpox matter. Lymph from the vesicles thus produced was conveyed to four children, and the ordinary phenomena of vaccination followed. Later than that (1830) Dr. Sonderland, of Barmen, in Prussia, blanketed some cows with the bedclothing of a deceased smallpox patient. Other coverings from the same bed he suspended around their heads, so that they must needs breathe the effluvia from them. In a few days the animals became sick and feverish, and an eruption precisely like that of genuine cowpox appeared. Lymph from these vesicles produced genuine vaccinia in the human subject. These experiments in their essential features have been many times repeated with the same result.

Vaccination, then, is the conveyance of smallpox, but of a smallpox wonderfully modified and stripped of its terrors in passing through the animal. In some way it has parted with its contagious property, so that vaccinated smallpox is not constantly spreading the disease by atmospheric infection, as used to be the case with inoculated smallpox. The horse, the sheep, and probably other animals, are, like the cow, liable to variolous infection, but not to the same degree. Jenner employed lymph from the horse quite largely, but since his day the cow has been almost the only source of original supply, so that the term vaccination, from *vacca*, a cow, is entirely appropriate.

KINDS OF LYMPH.

The material for vaccinating is now taken from both the heifer and the child; hence we speak of bovine and human virus. Until recently the latter was in almost exclusive use. From 1800, when the practice was introduced into this country, until 1870 bovine lymph was seldom procurable, because epidemics of cowpox were of infrequent occurrence. But about the latter date, answering to a clamorous popular demand, its production on a large scale by vaccinating calves and heifers began to be followed as a business. Establishments for the propagation of kinepox are now quite numerous. The animals are vaccinated on udders and teats, and the contents of the resultant vesicles are gathered at the proper stage and put on sale. As fast as the susceptibility of the animals to the cowpox infection is exhausted they are sold and others purchased. All places in the land with telegraph and railroad communication can now be supplied on short notice with recent bovine lymph. If your practice should be in the country, you may, with some trouble, produce your own supplies. Within a few years the use of human lymph has greatly lessened.

But the observant physician soon learns that there are some annoyances and drawbacks connected with this new fashion. Bovine lymph as now supplied to us is less reliable than the other. Failures with it are more frequent; so frequent, in fact, that probably there are many communities less secure against smallpox than they believe themselves to be. Possibly one reason is that our orders are sometimes filled from supplies that are not quite fresh; but a principal cause, I am sure, is in a certain lack of affinity between lymph from the cow and the human system.

Bovine lymph is also less regular in its operation. Though usually mild enough, it occasionally works with unexpected and undesired energy, causing much suffering and leaving unsightly scars.

CONVEYANCE OF OTHER DISEASES.

An asserted advantage of animal matter over human is immunity from the liability of conveying other diseases than vaccinia. This is a moving consideration with multitudes among the laity, who believe that all sorts of eruptions and blood-disorders are chargeable to human lymph. We pause to inquire if there are tenable grounds for such an opinion.

It is true that vaccination is sometimes followed by an erythematous, an erysipelatous, or an eczematous eruption. These, when not accidental, are caused by the local and constitutional irritation following the operation, and are oftenest seen after the use of bovine lymph, because it is more irritant than the other. I cannot find that there is any reliable evidence to warrant the opinion that chronic enlargement of glands, or scrofula, or consumption, or any of the ordinary skin-eruptions have ever been transmitted from child to child through vaccination. But how is it with syphilis? That is an inoculable disease; except when inherited, it is conveyed only by inoculation. May it be conveyed with vaccinia? There is no doubt of it. So many cases have now been recorded in which cowpox and syphilis have been simultaneously imparted by vaccination that they cannot be explained away, and vaccino-syphilis must be accepted as a fact. It has been thought by many, probably by most, that in all such instances there was an admixture of blood with the lymph, and that care to exclude that would obviate danger. Such was until lately my own view. I believed and taught that as we do not "gather grapes from thorns or figs from thistles," so do we not get a crop of syphilis from clear vaccine-lymph introduced with a clean instrument. But one of the experiments of Dr. Cory, chief vaccinator attached to the National Vaccine Establishment in England, makes me waver. To test this point,—the possibility of conveying syphilis with clear lymph,—that gentleman, with a self-abnegation and a zeal for science that I can admire but could never imitate, carried out a series of experiments on his own person. He repeatedly vaccinated himself from children who were plainly, and some of them actively, syphilitic, using, with greatest care, only the clear lymph. One trial, made July 6, 1881, was not, as previous ones had been, barren of result.

On this occasion he vaccinated himself in three places with clear lymph from a three months' old child who had an eruption, and sores that were evidently syphilitic. In three weeks syphilitic papules at the seat of two of the punctures appeared. These were followed in due course by sore throat, roseola, and other indubitable evidences of constitutional syphilis.* From this it would seem to be proven that clear limpid lymph *may* be a medium of carrying that disease from one person to another. But conceding this, it is to be remarked that this child was selected for this experiment because it had syphilis in an aggravated form, and that no medical man would ever think of taking lymph from such a source. There is no reason in all this for the rejection of all human lymph, but rather for careful scrutiny of the antecedents and present state of every child before allowing others to be vaccinated from it.

DEGENERATION OF LYMPH.

It has been claimed that lymph gradually parts with its protective virtue by passing successively through the human system, and that if we would give the completest possible insurance against smallpox we must use the bovine product altogether, or return to the cow at short intervals. We pause another moment to examine this claim. In 1816, Jenner wrote that the vesicles he was then producing were in every respect as perfect as in the first year of vaccination, though, to the best of his knowledge, the matter from which they were derived was taken from the cow about sixteen years before. In accord with that have been the observations of many eminent physicians since. Professor Hebra asserts that in the principal vaccine establishment at Vienna lymph has been carried down without interruption from the first vaccination at the beginning of the century, and that it now "takes" as well and is as protective as at first.* Dr. Charles V. Chapin, writing from the office of the superintendent of health, Providence, Rhode Island, December, 1885, says they were at that time using stock that had been maintained by continuous transmission from child to child since 1856 without being once renewed from the cow; that nearly forty-seven thousand persons had been vaccinated from it; and that it had shown itself not inferior to the bovine product in protective power, besides being more certain to take and less liable to produce troublesome sores. My belief is that lymph may degenerate, not by the mere fact of transmission through the human body, however many times the transmission may be made, but through lack of care to choose stock from healthy and vigorous subjects. Let a farmer gather seed-corn from stunted ears growing on poor soil, and he will soon be raising degenerated crops. This expresses a general fact of vegetable and animal propagation to which vaccination is no exception.

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* Boston Med. and Surg. Journal., vol. iii. page 188.

FORMS OF LYMPH.

The lymph used in vaccinating, whether human or bovine, is either fluid or dry. As a fluid it is conveyed by the lancet directly from the vesicle to another person, as in "arm to arm" vaccination. When numbers are to be operated on at once, as in schools and factories, this is the surest and best way. Fluid lymph may also be taken up from the vesicles in capillary glass tubes, which, after closure of the ends, are put aside for future need.

The use of dried lymph is, in this country at least, much more common. At the proper time the vesicle is punctured and the exuding lymph collected on ivory- or quill-points, and permitted to dry, or the vesicle may be left to mature. Its lymph then dries down into a dark brown crust, that falls from the arm about three weeks after vaccination. The bovine crust is notoriously unreliable, and is not very much used.

SELECTION AND PRESERVATION.

Vaccine-lymph is a perishable article, soon losing its virtue if exposed to light, air, warmth, or moisture. Under opposite conditions it may be kept indefinitely. It is not injured by any degree of cold. The quills and ivory-points now sent out from the various propagating establishments are either in boxes or in small bundles, closely wrapped in rubber-cloth. To give satisfaction they must be used without much delay. This also is true of human lymph put up in the same way. When it is desired to preserve the stock for some time, I think the human crust is preferable. In selecting lymph our first thought is of its purity. We usually take from children, as they are not likely to have acquired blood-disorders. Unless we have full knowledge of the family it is best not to take stock from an infant of less than three months, because it might have latent syphilis. The child that is to serve as a vaccinifer should have favoring antecedents, should be in perfect health and wholly free from skin-eruptions, and should have a *perfect* vesicle. If the crust is taken, it should be freed with utmost care from all extraneous matters by paring away the thin edge and scraping the under surface. To preserve it I usually put it up as follows: I divide it into three or four pieces and wrap each in tin-foil. These I drop into a very small vial, cover with absorbent cotton, and cork tightly. This bottle I enclose in a larger one, also containing cotton. This I label with the child's name and age and date. The whole is then wrapped in rubber-cloth or other dark, impervious material, and put in a cellar or an ice-chest, preferably the latter. All the last summer I used the crust so treated, without a failure in primary vaccinations.

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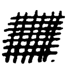
* Manual of Skin-Diseases.

OPERATION.

The only instrument needed in vaccinating is a lancet. This should be perfectly clean. It is a good rule to plunge in hot water and wipe dry just before using. The outer aspect of the left arm at or near the insertion of the deltoid, is by almost universal custom the place chosen. The chief ways of preparing the arm now in vogue are by abrasion and scarification or cross-scratching. In the first, the cuticle is scraped by the lancet over a surface of a quarter to a third inch square until a little serum appears. This prolonged scraping, while not painful, is not agreeable. In the second, linear incisions are made from half a line to a line apart, and these are crossed by others, after this manner:  This plan was, I believe, first proposed by Dr. D. Francis Condie, of Philadelphia, not far from 1830.* It appears to me to be the best yet devised, not only because it presents so many lines of absorbing surface that it is very certain, but also because it is scarcely at all painful or unpleasant. I have repeatedly, after this way, vaccinated sleeping infants without their waking. The incisions should be quite superficial. The little blood that follows may be wiped off or absorbed by a blotter. I commonly prepare two of these places an inch or more apart. The ground is now ready to receive its seed. If you use the quill or ivory-point, moisten the lymph-covered surface with a drop of clean, cold water. If you are using bovine lymph, remember that it is less soluble than the other, and it may be well, with lancet or penknife, to rub it up with the water. Now apply the moistened quill or ivory to the abraded or scratched areas, and rub and press well in, to insure absorption.

Using the dried crust, you will need but a diminutive piece for one operation, but make sure that that has no particle of blood or pus adhering to its under surface. It should then be mashed down with the knife-blade, or, as I prefer, between two small squares of glass. To the powder add a drop or two of water and rub into a paste. This is to be taken up by the lancet and applied in the same way as the quill or ivory. Before vaccinating a second person the lancet and the glass squares should be cleansed in hot water, and another piece of crust prepared. The secrets of successful and safe vaccination are care in the selection and preservation of lymph and cleanliness in every detail.

PHENOMENA.

The operation made, there is a period of latency of about three days' duration; sometimes a little less; frequently rather more, and in rare instances as much as a week. The short incubation of vaccinia is a most valuable property, as it enables us to forestall smallpox after known exposure.

On or about the third day a small, hard pimple may be seen and felt at the point of operation. With two days' growth it becomes a vesicle. In another day it has become umbilicated and divided into eight or ten cells like the smallpox vesicle. By the eighth day, or ninth at most, the vesicle has attained complete development. It is raised prominently above the surface, and is distended with transparent fluid. At this time or earlier, but by no means later, lymph may be collected for vaccinating others. The next phenomenon is the appearance of a belt of inflammatory redness around the vesicle. This is the areola, and is quite characteristic of vaccinal activity. With a day or two of growth the areola reaches a diameter of two to three inches. It is now of a bright red or livid color, and the flesh under it is commonly hard, painful, and itchy. Coincidently with the areola appear usually some constitutional symptoms, as headache, rigors, alternating with fever and general soreness and aching. Often the whole arm is lame and some of the axillary glands swollen. If there is much discomfort, relief may be had by applying lead lotion or a light poultice to the arm, and giving an anodyne, as Dover or Tully powder.

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* Condie on Diseases of Children. Fifth edition, page 544.

After the tenth day there is rapid decline. The constitutional symptoms disappear; local pain and itching subside; the areola fades away, the fluid of the vesicle becomes opaque and concrete, and soon dries down into a dark brown crust. About the twenty-first day the crust falls, leaving a circular, depressed scar, with little pits and radiating lines, that seem to correspond with the cells and partitions of the former vesicle. The scar is red at first, but becomes white with time, and commonly remains through life.

DEVIATIONS FROM REGULAR COURSE.

Observing the care that I have enjoined, you will rarely see much departure from the course above given. The phenomena are frequently retarded, especially if bovine lymph is used, but the protection is not less complete, provided the symptoms succeed each other in due course with characteristic vesicle and areola. Physicians have sometimes been accused of using impure stock because the vaccination has been followed by an eczema or a crop of papules or other eruption, or by enlarged lymphatic glands. If we remember how often the irritation of coming teeth causes like symptoms, we are not surprised that the "working" of vaccinia should sometimes put out these signals of systemic perturbation.

Doubtless diseases and tendencies that have been hitherto latent may be stirred into activity by this operation. I think this is true of scrofula; and may it not be reasonably supposed that in some of the instances recorded as syphilitic inoculation that disease was pre-existent but unsuspected until the constitutional commotion of a vaccination spurred it into life?

Traumatic erysipelas sometimes follows this procedure. I was once called to prescribe for a frugal woman who had performed auto-vaccination, using liberally of the crust as it had fallen from her son, without scraping or paring. Her whole arm was erysipelatous; large abscesses formed, and lasting disfigurement resulted. Fatal pyæmia has also been known, so it is said, after vaccination. I think it is because of the care that physicians as a rule exercise that both of these disorders are so rare.

DEGREE OF PROTECTION.

To what extent does a single vaccination insure against smallpox? Certainly with the majority the security is complete and lasting. Comparatively few of those who can show a characteristic scar contract smallpox on exposure. But there are some for whom the operation is but a partial safeguard; some in whom there is liability to a mitigated smallpox. It is quite probable that in some instances the vaccinal impression upon the system was not all that it might have been, and that a second operation done soon after the first had run its course might still have produced characteristic results and might have conferred additional security.

It is certain that with many persons the protection, though complete at first, becomes progressively less as time goes on. Especially is this true of many who, vaccinated in infancy, have reached mature life. There can be no doubt that the vaccinal influence diminishes with the constitutional changes that take place at puberty.

But while vaccination does not in all cases establish a perfect security, neither does smallpox itself do that. In numerous instances persons have had that disease twice. Some years ago I attended a man with well-marked variola whose body bore the certain evidences of a previous attack. This, in a word, is the protection afforded by *thorough* vaccination: complete and lasting to the vast majority; to a small minority partial; to all, with scarcely an exception, security against great suffering, extreme disfigurement, and death.

SUSCEPTIBILITY UNIVERSAL.

Insusceptibility to the infection of cowpox is, I believe, most infrequent. Often, to be sure, a child is vaccinated two, three, or more times without result, but I am of the opinion that the failure is generally due to the lymph or the vaccinator rather to the subject. Of upwards of nine thousand operations done at the Blackfriars' Station of the National Vaccine Establishment since 1859, there was but *one* case which, on a second trial, was unsuccessful.* No doubt there are times in the lives of many, perhaps of most, when the operation succeeds less readily than at others; probably some have seasons of complete insusceptibility, as sometimes when other serious diseases are present in the system; but that any of the race are through life wholly insensible to the influence of vaccinia I hardly believe. Skilled operators with fresh lymph have seldom to report failures in primary vaccinations.

AGE AND SEASON.

Evidently if immunity from so terrible a disease can be conferred by means so simple and harmless, the blessing should be extended to early infancy. All authorities recommend, and the laws of many countries require, the operation to be done before the end of the first year. I believe the best time is between the first and fourth month. It is then well over before dentition begins. If the child is sickly, or has any skin-eruption, it should be got into good condition beforehand.

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* Seaton, Hand-Book of Vaccination.

But when smallpox is prevalent there is no age, however early, and no degree of poorliness, that should bar out the operation. In imminence of danger, as when variola is in the same street or house, I would vaccinate an infant immediately on its birth; if an arm presented I might do it before that. Experience has shown these early operations to be as safe and protective as later ones.

Books have something to say about the best time of year for vaccinating, but I think it matters little. In winter and in summer the course of vaccinia is the same. In this city more operations are done in early autumn than at other times, but that, I suppose, is because the authorities require certificates from all new pupils at the beginning of the school year.

REVACCINATION.

The liability to loss or diminution of protection with lapse of time creates a frequent necessity for repeating the operation. Children also, in whom the primary working has not been typical, or whose cicatrices are indistinct or destitute of proper markings, should be revaccinated. Statistics show that after successful revaccination smallpox is an exceedingly rare event, and I think that as a measure of public safety all persons, without regard to the time of the primary operation, should be required to renew it at or soon after puberty. Wherever it is not a requirement of law this duty is too much neglected. I can see no harm either, but much possible good, in resorting to it again with every near visitation of smallpox.

Doubtless, in most cases of revaccination you will get no result; in a larger majority, however, the ordinary phenomena appear, but in an irregular way. The vesicle is apt to be small, acuminated, and without a central depression. It usually takes a rapid course, reaching full growth by the sixth day instead of the eighth, and then rapidly declines. The crust is likely to be small and imperfect, and should *never* be used to vaccinate from, nor should lymph for this purpose *ever* be taken from a secondary vesicle.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Jacobi: A Local Treatment of Diphtheria. (*Medical Record*, April 9, 1887.)

Dr. Jacobi expressed pleasure in hearing Dr. Billington's paper, and briefly discussed some of the measures. He compared constitutional diphtheria to septic absorption in wounds or puerperal fever, hence uses the same treatment, viz., local antisepsis. Advocated papayotin solved in twenty parts water and injected, sprayed, or applied with a brush. Steam advantageous, especially where there are a great many muciparous follicles under cylindrical epithelium. Where there is pavemented epithelium and a few such glands, steam treatment will do but little good. Mouth and neck must be kept in good condition, and stomatitis, chronic pharyngitis, hypertrophied tonsil, and glandular enlargement must be cared for preventively. Swollen lymph-glands require ice, iodine, iodoform, mercury, or excision according to circumstances.

Nasal diphtheria is apt to be fatal, and yields only to careful treatment, commenced at once and continued day and night for several days whether gland-swelling be great or not. Injudicious use of syringe or spraying apparatus is often very harmful.

The question of concentration or dilution of antiseptic solution has been settled on the side of the latter by Dr. Prudden, who shows that a one-sixteenth-per-cent. solution of carbolic acid prevents emigration of white blood-corpuscles, while Koch finds that the growth of bacteria is checked by a solution of one part in eight hundred and fifty, their activity by one in twelve hundred. This is generally all we require.

Local treatment of laryngeal diphtheria consists in emetics, as zinc, copper, or turpeth mineral, when membrane is to be removed, and in tracheotomy or intubation. Diphtheritic paralysis requires friction, hot baths, and faradic current. Conjunctivitis benefited by ice-cloths repeated every few minutes and boracic acid.

Smith, J. Lewis: Local Treatment of Diphtheria. (*Med. News*, April 9, 1887.)

Whether diphtheria be primarily local or constitutional, when the physician is called he has in most cases a constitutional disease. The exudation on faucial surface is deeply seated and near the blood-vessels. Besides, we know that in severe attacks nephritis often begins in twenty-four hours. When there are six or seven days of period of incubation it probably becomes consti~~tutional. But~~ we must not neglect local treatment, nor should we apply powerful acids and other substances to faucial surface, nor remove the membrane by force, since we can render it inert by local treatment. Has used the following with good results:

Acidi carbolici, gtt. x;
Liq. ferri subsulphat., ℥ii. M.

This is conveniently applied with camel's-hair pencil, two or three times per day. For more frequent use:

Aquæ chlorinæ, ℥i;
Sodii bicarbonat., ʒss;
Mellis,
Glycerinæ, āā ℥ss;
Aquæ calcis, ℥iv. M.
Sig.—Use in atomizer every one or two hours.

Here the solvent action is increased by the bicarbonate.

Nasal diphtheria is often overlooked at first, or supposed to be simple coryza. It is dangerous owing to the character of tissue involved, which is well fitted for septic absorption. Uses:

Acidi boraci, ʒii;
Sodii borat., ʒii;
Sodii chloridi, ʒi;
Aquæ, Oi. M.

Has witnessed dangerous consequences from administration of pilocarpine for supposed local action. Patient perished with symptoms of extreme dyspnœa. Useful in nephritis. Pilocarpine does not appear to be proper thing during active period of diphtheria; in fact, extremely hazardous.

Hirschler: The Influence of the Carbohydrates and some other Bodies in the Fatty Acid Series upon Albuminous Metamorphosis. (*Arch. f. Kinderh.* [abstracted], viii. 3.)

These very interesting investigations show that, both without and within the animal body, cane sugar, starch, dextrine, glycerin, and lactic acid delay or diminish the formation of the products of albuminous metamorphosis, indol, phenol, and certain acid combinations, while the fats have no influence in this respect. This demonstrates chemically what Escherich ascertained by his excellent bacteriological investigations,—namely, that a milk diet, on account of its richness in milk sugar, favors the development of lactic acid bacilli, but opposes that of micro-organisms which excite decomposition in albuminoids. The importance of a change of diet, to which he called particular attention, in connection with diseases of the intestinal tract is established upon a sure foundation by the investigations which this paper records. At the same time it recalls the method of treating intestinal catarrh in children with sugar, which was recommended by Behrend and Sieber in 1857, and which, since that time, has been almost forgotten.

A. F. C.

Michael: The Treatment of Whooping-Cough. (*Arch. f. Kinderh.*, viii. 2.)

The author's views upon this subject are summarized as follows:

1. Whooping-cough is a reflex neurosis of the nose, which is distinguished from other neuroses in the fact that in this case the nasal mucous membrane is not reacting to some chemical or mechanical irritant, but exclusively to the specific irritation of the whooping-cough poison, resulting in the well-known attacks. This theory is based upon the author's experience.

2. In a large percentage of the cases the ordinary duration of the disease may be shortened by means of insufflation of a suitable powder into the nose. The powder which is recommended for this purpose is that which is obtained from the resin of benzoin.

3. For a long time the author could not understand why a plan of treatment which was successful in seventy-five per cent. of cases should utterly fail in the remaining twenty-five. Further experience has taught him that a bad or a relatively bad prognosis must be given in those cases in which adenoid vegetations are present, in those in which the mucous membrane is extensively diseased, and in those in which severe attacks of sneezing occur.

Recurrences are very apt to take place after wetting the feet, a change from good to bad weather, and after suspension of treatment in cases which are, apparently, quickly cured. It is, therefore, recommended that treatment be continued several days after the attacks have ceased.

5. After the result of one to three treatments has been seen, the prognosis as to the future course of the disease can be more definitely determined. If after the first few treatments the attacks per day are diminished by from three to twenty, a mild course may be expected. If while the first few treatments are given the attacks increase by from ten to thirty per day, it is

probable that the duration of the disease will be greatly shortened. If the number of attacks remains uninfluenced by the first few treatments or increases by from two to five per day, as is the rule in cases which receive no treatment at all, no success from treatment can be expected. The disease will probably take its normal protracted course. A. F. C.

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Steffen: Concerning the Action of Sulphate of Thalline. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], February, 1887.)

The author thinks that this agent is especially valuable in the treatment of the diseases of childhood. As it has no disagreeable taste, children will readily take it in watery solution. It never excites either diarrhœa or vomiting. Its action is usually manifest within an hour after its administration, and the resulting defervescence usually lasts three or four hours. The ordinary dose is from five to twelve centigrammes, and rarely are more than two doses required in the course of twenty-four hours. The temperature is usually reduced from two to four degrees by its use, the defervescent action varying with the individual as well as with the nature of the disease. Its action is most satisfactory in such diseases as typhoid fever, broncho-pneumonia, and chronic phthisis. The results have been less satisfactory in scarlet fever, measles, and diphtheria. The pulse and respiration usually follow the oscillations of the temperature. The recurrence of high temperature is only exceptionally accompanied by chills and cyanosis. The author has never seen collapse follow its use. A. F. C.

Bungenroth: Antipyrin in the Treatment of Infectious Diseases in Children. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], February, 1887.)

The author has investigated in a large series of cases the influence which is exercised by antipyrin in the evolution of different infectious diseases in children, and his results harmonize with those which previous investigators have obtained. Twenty-two of the patients who received antipyrin suffered from typhoid fever. The medicine was given by the mouth in all cases but one, in which it was used subcutaneously. The doses were regulated, on the one hand, by the age and vigor of the patients, and, on the other, by the period and intensity of the disease. Even in children, eleven years of age, doses of not more than thirty or forty centigrammes produced a decided depression of the temperature. In addition to the defervescence a series of favorable modifications were also observed, the children becoming quieter, their intellect remaining unimpaired in most cases, their diarrhœa diminishing, and diuresis increasing. In many of the cases under the author's observation profuse sweating accompanied with a considerable dilatation of the veins were observed. Among the accidents which followed the use of antipyrin was a decided tendency to collapse, and for this reason only small doses were used. In no case did the drug have any specific action upon the progress of typhoid fever. In ten cases of scarlatina the antipyretic effect was produced in a much more satisfactory manner than in typhoid fever, but it is particularly necessary to watch the effect of the medicine in this disease, even more than in typhoid fever. The author thinks its use is contraindicated in diphtheria, as it may produce cardiac paralysis. In pneumonia it always produced satisfactory results. A. F. C.

Demme: The Injurious Influence of Alcohol upon the Physical and Intellectual Development of Children. (*Jahrb. f. K.* [from the twenty-second annual report of the Children's Hospital in Berne], xxv. 4.)

The astonishing fact that in the case of fifty-three children who were brought to this hospital in the course of six years, and who showed decided deficiency as to intellectual development, there was evidence that the father or both parents of at least twenty of them were addicted to the habitual use of alcoholic stimulants,—this fact induced the author to turn his attention to the abuse of alcohol as a therapeutic agent in the treatment of disease in children. Especially is it common among the mothers in the author's vicinity to give their children alcohol, whether in the form of cognac or the still stronger liquors which are rich in fusel oil, in the summertime for the various gastric and intestinal troubles, especially those which are associated with diarrhœa. In the case of two boys, one of four and a half and the other of eight years of age, gin had been used daily for a very long period, having been given at first for the relief of a chronic gastro-intestinal catarrh associated with icterus and ascites, and fatal in its issue. The autopsies in these cases showed hyperæmia of the cerebral meninges and the brain, and enlargement of the liver and spleen, with increase in their connective tissue. Apart from these two cases of interstitial hepatitis, the etiology of which could not be questioned, there were cases of epilepsy which were directly traceable to the immoderate use of spirituous liquors. In two cases it was not the habitual use of alcohol which had caused the epileptic convulsions, but the first attack occurred upon the very night after alcoholic intoxication for the first time had occurred. One of the cases was that of a boy nine years old, without hereditary tendency to the alcohol habit, who was first attacked late at night with a series of epileptic paroxysms, lasting an hour and a half. These attacks recurred, for months, every eight days, and were finally controlled to a certain extent by the use of bromide of potash.

The second case was in a boy eight years old, who had his first attack a short time after drinking a bottle of white wine. The attacks recurred frequently at night, and his sleep was usually unrestful. The attacks were finally brought under control after a long sojourn in the country, with careful watching and the use of a milk diet. The harmful influence of spirituous liquors upon children was also shown by the development of *night-terrors* and chorea under its use. Cognac had been given in such cases by the parents to strengthen the children, and they began to improve when its use was discontinued. The author, therefore, condemns the ordinary use of such agents for children, and limits them strictly to cases in which they are required for specific therapeutic purposes.

A. F. C.

Bianchi: Cocaine in the Treatment of Disease in Children. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1887.)

Pott, of Breslau, was the first to show, to any extent, the application of the preparations of coca in the treatment of disease in children. He stated that he had used the tincture of coca (one part, by weight, of coca-leaves, to five of alcohol) in fifty cases of mild or severe enteritis, colitis, gastro-enteritis, and *cholera nostras*, in children under two years of age, in doses of five, ten, fifteen, or twenty drops, every hour or every two hours, with a little sweetened water, with good results. The effect in cases of collapse from *cholera nostras* was said to be remarkable. It was also found to be an excellent stomachic, but without effect in convulsive affections. As many as one hundred drops, in divided doses, were given in cases of *cholera nostras* before the vomiting and diarrhœa ceased.

Extract of coca has been given in pill form, in doses of five to ten milligrammes, three to six pills being required for children between six and fifteen years of age. The extract has the same action as the tincture, and seems to be useful in the spasmodic neuroses, in hysteria, and in epilepsy. Hypodermic injections of one to two centigrammes of cocaine in watery solution have produced insensibility to pain. Local applications of a ten-per-cent. solution of cocaine have produced gustatory anæsthesia, and total insensibility of the entire tongue.

Local applications with a five- to ten-per-cent. solution may be made in inflammatory conditions of the throat, and in the paroxysms of suffocation attending pharyngo-laryngitis and spasm of the glottis. In whooping-cough, according to Pott, applications to the posterior pharyngeal wall with a five-per-cent. solution, two or three times daily, will greatly diminish the number of paroxysms. Its great value in the treatment of this disease is confirmed by Prior, Labric, Barbillon, Moncorvo, and Cadet de Gassicourt. Some of them used as strong as a twenty-per-cent. solution without harm, and with the most satisfactory results. The principal contraindication to the local applications consists in the difficulty in making them upon very small children, and the want of courage in the mothers to allow them to be made. The first attempt to apply the drug may excite a paroxysm of coughing, and this often serves as a pretext, with the mothers, for giving it no further trial. It has been proposed to obviate this trouble by inhalation of a hot concentrated solution (the strength varying with the age of the child) twice daily. For general use the following formula is suggested:

℞ Cocaine mur., 0.10 gramme;
Aq. destil., 45 grammes;
Potass chlor., .50 gramme;
Aq. destil. amygdal. amar., .50 gramme.

To be used locally for whooping-cough, hysterical cough in women, etc.

This agent is also recommended by the author for internal use in whooping-cough, the doses being as large as can be borne, and continued for several days, especially if the cases are severe ones. The drug has always been well tolerated by the author's patients, and never interferes with the general nutrition. The vomiting is usually relieved after one or two days of treatment, the paroxysms of cough gradually lose their peculiar characteristics and assume an intensity proportional to the existing bronchitis. In the coryza of new-born infants, which so interferes with nursing, a few drops of a two-per-cent. solution introduced into the nose several times daily will produce great relief. A. F. C.

Parker: On the Alleged Dangers of Starch-Containing Foods in Infancy. (*Brit. Med. Journal*, April 9, 1887.)

While it cannot be gainsaid that many artificially-fed children are puny and weakly, it has come to be generally accepted that they are so *because* they are so nourished. Artificial feeding is, no doubt, carried on to a frightful extent. The writer is no advocate of this as a substitute for maternal nursing. The real cause of the immense infantile mortality among the poorer classes is *congenital debility*. The children are born with such constitutions from mothers themselves feeble, suffering from poverty, the consequences of intemperance, and all their attendant miseries. It is scarcely to be expected that women under such conditions would produce healthy children, or even good breast-milk. An analysis of one hundred cases of artificially-fed children, taken as they came, gave the following results:

In three the mother was dead and the child was brought up by strangers.

In two (illegitimate) the mother had deserted the child.

In one case the child was separated from its mother because of puerperal mania.

In two cases the mother had been sent to prison.

In seventeen the mother was too delicate to nurse the child entirely.

In thirty cases the milk failed to satisfy the child,—*i.e.*, known as "hungry-milk."

In twenty the quantity of milk was deficient.

In twenty-five cases the mother was obliged to go out to work during the day, leaving the child to be looked after by some one else.

Thus in one-fourth the cases only would it have been possible to give the child sufficient breast-milk.

In three-fourths the milk was deficient in quality or quantity from some cause or other.

Too little stress, the writer thinks, has been laid upon the inherited weakness of these children, and too much upon the artificial feeding, especially with starchy foods. In years gone by, before malted foods were so extensively used as now, hundreds of children throve upon milk thickened with one of the common starch-containing cereals. It is well known that animals fed on starch do not develop rickets and the diseases usually attributed to starch-feeding, but die of inanition, as the starch passes out in their stools unaltered. While if it could be shown that starch was broken up into some injurious products, something could be established to reason upon.

Much harm has resulted from the almost exclusive attention which has hitherto been bestowed upon this element of infantile dyspepsia. In the preparation of artificial foods the great aim of the manufacturers has been to reduce the starch, following the common prevailing belief that then they are quite harmless. We must go deeper than this if the result we desire is arrived at.

The paper concludes with a strong plea for maternal nursing, both for the child's and mother's sake, with a statement of belief that the danger of a mother's conveying to her child any dyscrasia by suckling is almost *nil*, and with an earnest plea to the profession to aid, so far as possible, in removing the causes which make artificial feeding on so large a scale a necessity.

Liébault: Treatment of Incontinence of Urine by Hypnotic Suggestion. (*El Prog. Gin. y Ped.* [abstracted], January 10, 1887.)

Seventy-seven children above three years of age affected with incontinence of urine were treated with this means by the author, besides many adults. Twenty-three were cured after one or two *séances* without recurrence. Twenty-three were cured after several *séances*, but finally failed to report their condition, so that the ultimate result is not known. Ten were cured after a long series of treatments, and then disappeared from observation. Nine were improved. Four were seen only once. Eight were not cured.

The treatment resulted in cure in about eighty-five per cent. of the cases. As to etiology, one occurred after pneumonia, one after angina, one in consequence of masturbation, two without apparent cause, and seventy-eight had suffered from this condition since infancy. A. F. C.

Veillard: Treatment of Intestinal Worms in Children. (*Jour. de Méd.*, April 17, 1887.)

Whenever a remedy for worms is given, one must not forget to give in addition a purgative which will not only assist in expelling the parasite which has been killed or dislodged by the remedy, but will also tend to prevent the absorption of the latter and the bad consequences which would attend it. Thus, the oleaginous purgatives which are used for indigestion always give the best results when used as adjuvants to vermifuges. A very small dose of santonine administered with an oily substance like chocolate will have a much more positive effect than a much larger dose given with honey; for the larger portion of the latter would be absorbed in the stomach, and a very small quantity would reach the large intestine. Consequently the vermifuge element would enter immediately into the circulation, and might cause the phenomena of intoxication without having produced any effect upon the parasites, the most of which locate themselves in the small intestines. If a vermifuge is mixed with a fat, on the other hand, it will traverse the entire intestine, and consequently have a much more positive effect upon the intestinal parasites. In general terms, therefore, vermifuges should be combined with agents which tend to prevent their absorption; and in order to obtain the maximum effect the purgative agent should be given before or at the same time with the vermifuge. The following formulæ are recommended:

1. VERMIFUGE ELECTUARY (Bouchut).

℞ Pumpkin-seeds, cleaned and pounded, 25 to 45 grammes;
Honey, 20 grammes.
M. and ft. electuarium.
Sig.—Dessertspoonful every half-hour.

2. POTION FOR TÆNIA (Davaine).

℞ Tinct. kameelæ, 6 grammes;
Syr. cort. auran., 20 grammes;
Aquæ arom., 120 grammes.

Sig.—Take at one draught. Should the tænia not be expelled after two hours, take a full dose of castor oil.

3. POTION OF THE ETHEREAL OIL OF MALE FERN.

℞ Ol. æther. filicis mas, 3 grammes;
Tinct. vanillæ, 3 grammes;
Syr. terebinth., 25 grammes;
Mucil. acaciæ pulv., 2 grammes;
Aq. destil., 25 grammes.

To be taken in one dose with an equal quantity of milk. A dose of castor oil should be taken a few hours later.

For ascarides lumbricoides the following formulæ may be tried with satisfaction:

℞ Santonini pulv., 40 grammes;
Sacchari albi, 2000 grammes;
Mucil. tragacanthi, 180 grammes.

To be made into tablets containing five decigrammes each. Each tablet contains one centigramme of santonine. From five to thirty tablets are to be taken at a dose.

℞ Chocolate, 330 grammes;
Santonine, 3 grammes.

To be made into three hundred lozenges. Dose, five to twenty of the lozenges.

℞ Calomel, 0.15 gramme;
Santonine, .10 gramme;
Sugar of milk, 1 gramme. M.

To be given in the morning with a small spoonful of honey, to children about four years of age. It is useful both for lumbrici and oxyuri.

The following are recommended for oxyuri vermiculares:

℞ Sodii chlor., 40 grammes;
Aquæ, 200 grammes.
To be injected *per rectum.*

℞ Calomel, .25 gramme;
Mucil. sem. lini, 125 grammes.

Mix, and inject twenty or thirty grammes, *per rectum*, morning and evening.

℞ Ol. theobromi, 4 grammes;
Calomel, .10 gramme.
Ft. suppositorium.

This suppository may be repeated if there are evidences that it is required.

℞ Ol. theobromi, 4 grammes;
Acidi tannici, 1 gramme.
To be taken in the form of a suppository.

℞ Aquæ calcis, 120 grammes;
Liq fer. perchlor., gtt. x.
To be used as a rectal injection.

A. F. C.

Buttin: Maximum Doses of Medicinal Agents for Children. (*Jour. de Méd.*, April 10, 1887.)

The following table was prepared on account of certain criticisms which have been made in respect to the dosage advocated by the various pharmacopœias. It was especially suggested by the poisoning of a child which came under his observation. The standard dose is, as usual, that which is proper for the average adult, and the gradation is observed as follows:

For children

1 to 2 years of age, $\frac{1}{10}$ of the standard.
2 " 5 " " " $\frac{3}{20}$ " " "
5 " 7 " " " $\frac{1}{5}$ " " "
8 " 10 " " " $\frac{3}{10}$ " " "
11 " 13 " " " $\frac{1}{2}$ " " "
14 " 16 " " " $\frac{2}{3}$ " " "
17 " 19 " " " $\frac{3}{4}$ " " "

The author has also prepared a work which compares the maximum doses of the different pharmacopœias. A. F. C.

II.—MEDICINE.

Lebedeff: The Intra-uterine Transmission of Erysipelas. (*Rev. Mens. des Mal. de l' Enf.* [abstracted], March, 1887.)

In a given case a woman was attacked with erysipelas of the lower extremities when her pregnancy was nearly completed. A normal accouchement followed. The child was of delicate structure, weighed thirteen hundred grammes, and lived only ten minutes. The entire surface of the body was covered with red spots, surrounded with white zones, which were somewhat prominent. The skin was due to an excoriation of the epidermis. The liver was greatly hypertrophied. By microscopical examination, a large number of the characteristic micrococci of erysipelas were found in the lymphatic vessels and spaces in the skin and cutaneous cellular tissue. The microbes were not present in the blood and in the placental tissue, but they were abundant in the lymphatic spaces of the umbilical cord under the amniotic membrane. The transmission of erysipelas from mother to child could be clearly followed in this case. The micrococci which were in the lymphatics of the lower extremities of the mother passed into the internal iliac plexus, thence by means of the external inguinal plexus into the lymphatic vessels of the uterus, and finally they reached the lymphatics of the placenta and the cord. Two analogous cases of intra-uterine transmission of erysipelas from mother to fœtus have been recorded by Kaltenbach and Runge. A. F. C.

Guttmann: The Etiology of Acute Articular Rheumatism and its Complications. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], March, 1887.)

A boy fourteen years of age was seized with fever and severe pain in the left thigh. It was supposed to be a case of osteomyelitis, but very soon there was a decided swelling in both knees, in the coxo-femoral articulation upon the left side, and in the elbow of the same side. The diagnosis of acute multiple articular rheumatism was therefore decided upon. After a few days there was pericarditis with abundant effusion, temperature ranging from 38.5° C. to 39.8° C. Two weeks from the time the attack began he was suffering from intense dyspnœa, with feeble pulse. The pericardium was punctured and a certain quantity of purulent fluid withdrawn. Death occurred on the following day. At the autopsy six hundred grammes of sero-purulent fluid were found in the pericardium. The kidneys contained a number of small abscesses. On the left side of the thorax there was a large intra-muscular abscess, and in the articular capsule of the knee there was a sero-fibrinous exudate. Specimens of the fluid from all these collections were examined microscopically, and in each of them were found small collections of micro-organisms. They were cultivated upon gelatin, and all were reproduced with the same characteristics. In each case the microbe was the *staphylococcus pyogenus aureus.* These facts showed clearly that the articulations, the pericardium, the kidneys, and the thoracic wall had all been invaded by the same micro-organism which had primarily attacked the articulations and secondarily the other organs. It was the author's opinion that the microbe which invades the articulations in a case of rheumatism is the same as that which is found in the heart in pericarditis. Later on in the disease the microbes are eliminated from the organism through the kidneys. A. F. C.

Lunin: Statistics and Treatment of Diphtheria. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], February 8, 1887.)

Of two hundred and ninety-six children treated in Prince Oldenburg's Hospital for Children, during 1882, on account of diphtheria, one hundred and sixty-four died. Among the substances used for treatment were sublimate, perchloride of iron, quinoline, resorcine, bromine, and oil of turpentine. The sublimate treatment consisted in local applications of a one-one-thousandth solution every two hours, and irrigation of the pharynx with a Rauchfuss irrigator. Of fifty-seven children thus treated, forty-three had the fibrinous form of the disease, and fourteen the septic phlegmonous; thirteen of the former died, and thirteen of the latter; the average mortality for sublimate treatment being forty-five per cent. In ninety-four cases one drop of perchloride of iron was given every quarter-hour, or two drops every half-hour. Of these, forty-three were of the fibrinous form, and fifty-one of the septic phlegmonous; fourteen of the former died and thirty-nine of the latter; average mortality, 56.3 per cent. In addition to the iron the pharynx was irrigated every hour with a three-per-cent. solution of boric acid.

In twenty-eight cases quinoline was used, nineteen being of the fibrinous and nine of the septic phlegmonous form; of the former, six died, and all of the latter; average mortality, fifty-three per cent. Local applications of the quinoline were used, the solution containing five grammes of pure quinoline and fifty each of distilled water and alcohol. Irrigations were also made with a solution containing one gramme of quinoline, five hundred of distilled water, and 50.2 of alcohol.

Local applications of resorcine in ten-per-cent. solution were made twice an hour, and irrigations with a one-per-cent. solution in twenty-nine cases. Of the twenty-nine cases, ten had the fibrinous form and nineteen the septic phlegmonous. Of the former two died, of the latter seventeen; average mortality, sixty-five per cent. Bromine was used in thirty-three cases; local applications being made from one to three times hourly, with a solution containing from half a gramme to a gramme of bromine, and an equal quantity of bromide of potassium, with two hundred grammes of distilled water. Once or twice hourly inhalations were made from a solution containing of pure bromine and bromide of potash each six decigrammes to a gramme, and three hundred grammes of distilled water. Of the thirty-three cases, fifteen were fibrinous and eighteen septic phlegmonous; seven of the former died and sixteen of the latter; average mortality, 69.7 per cent. In twenty-three cases oil of turpentine was used, ten drops being given every hour, and the average duration of treatment being two to three days. Gargles with a three-per-cent. solution of boric acid were used in addition. Of twenty-three patients who received this treatment, twelve having the fibrinous and eleven the septic phlegmonous form, one of the former and nine of the latter died; average 43.4 per cent. Thus the lowest mortality for the fibrinous form was 8.3 per cent., and obtained under treatment with oil of turpentine. The lowest mortality in the septic phlegmonous form was 76.5 per cent., occurring with the perchloride of iron treatment. In thirty-two cases which were observed during the same period as the preceding, and at the same hospital, and in which none of the previous methods of treatment were used, there was a mortality of fifty-six per cent., which is almost identical with the average mortality from the most modern and approved methods of treatment. The comparison is both striking and suggestive. In ninety-five of the cases there were complications affecting the larynx and respiratory organs. Of these, seventy-one were of the fibrinous form and twenty-four of the septic phlegmonous. Of the former forty-seven died, of the latter twenty-two. These complications were treated with hourly inhalations of a two-per-cent. solution of bicarbonate of soda, each inhalation lasting five minutes. Sublimate was also administered hourly in doses of two and one-half milligrammes, and usually one to three milligrammes of apomorphine at the same intervals. If the disease were not stayed by these means hydrotherapy was tried; that is, the patient was caused to swallow three or four litres of water or weak tea, containing also a little sugar and a little cognac, in the course of the twenty-four hours. Besides, the patient was enveloped for one or two hours with damp cloths, over which woollen coverings were laid. By this means profuse perspiration was induced, the mucous membrane became moist, and the cough less harsh. This plan was sometimes repeated five or six times in twenty-four hours. Tracheotomy was performed in thirty-five cases with five recoveries, all being of the fibrinous form. Of the entire series of two hundred and ninety-six cases, one hundred and fifty-nine were boys and one hundred and thirty-seven girls. The mortality in the former was 67.9 per cent., in the latter forty-six per cent. The urine was examined in two hundred and seventeen cases, and found to contain albumen in one hundred and sixty-one of them. Of the latter number eighty-six died. Of the seventy-five which survived, the albuminuria persisted in most cases from two to seven days, in nineteen was still to be found in the urine when they were dismissed from the hospital.

A. F. C.

Marotta: Investigations concerning the Microbe of Smallpox. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1887.)

The author's investigations led to the following conclusions:

1st. There is constantly in the lymph of the vesicles of variola, before the pustular stage has been reached, a single species of micro-organism, and a special micrococcus, the *micrococcus tetragonus*. In the pustules other micrococci are found, especially the *micrococcus albus*, which is like the parasite which has been incorrectly referred to by certain writers as the specific microbe of variola.

2d. Some writers, among them Klebs, Cohn, and Bareggi, have already seen a *micrococcus tetragonus* in the pus of variola, but have been unable to isolate it, and have not given it the consideration which it deserves, regarding it as an accidental phenomenon (Cohn), or as indicating a period of arrest in the process of reproduction by division (Bareggi).

3d. The small organisms observed by Bareggi, and considered by him as spots in the cultures, should be carefully isolated and colored, otherwise the four micrococci, which each contains, will not be seen.

4th. The *micrococcus tetragonus*, which was studied by the author, may be readily cultivated in nutritive gelatin, in agar-agar made very alkaline, in the serum of coagulated beef-blood, and on boiled-egg albumen, but it does not develop upon potatoes.

5th. The *micrococcus tetragonus* of variola thrives better in a slightly alkaline medium, and after its first artificial cultures in substances which are gradually made less alkaline.

6th. The colonies which are obtained by culture have a fine orange-yellow color, and are thickly spread over the surface of culture. Their maximum thickness is obtained when cultivated upon egg albumen.

7th. Their development is slow in nutritive gelatin, their maximum being reached in a little more than a month. It is rapid in the serum of coagulated blood at a temperature of 37° C.

8th. The *micrococcus tetragonus* slowly dissolves the nutritive gelatin and the serum of coagulated blood. The former begins to dissolve at the end of a month at a temperature of 21° C.; fusion ends in the course of the following twenty days. The latter begins to dissolve at the end of two to five days, according as a temperature of 37° C. or of 21° C. is brought to bear upon it. In a month the fusion of the serum is almost complete.

9th. The gelatin and the blood-serum have an intense alkaline reaction after the fusion.

10th. The development of the microbe varies between 16° C. and 43° C.

11th. Inoculations upon calves, even with cultures of the seventh generation, produce pustules identical with those of vaccinia, which proves that the *micrococcus tetragonus* is the specific microbe of variola.

12th. Inoculations in the skin of dogs are negative, even when the blood is made more alkaline.

13th. Inoculations in the subcutaneous connective tissue of rabbits and guinea-pigs—two grammes being used for each injection in the former and half that quantity in the latter—produce no specific lesion, which shows that this microbe has no affinity with pyogenic micrococci.

14th. Therapeutic conclusion. The cure for acid conditions is indicated in the facility with which development takes place in alkaline media. A. F. C.

Bernhard: Abscesses of the Liver in Childhood. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1887.)

Three cases are reported which were seen in the clinic of Kohts, of Strasburg. The first was in a well-developed boy, ten years of age, of good family history. He was seized with violent chills October 27, 1884, with intense abdominal pain, and vomiting of biliary matter. Thirteen days after the beginning of the disease he was suffering from intense abdominal pain, especially in the ileo-cæcal region and the right hypogastrium; swelling upon that side was noticed on the twenty-second day. The fever was pyæmic in character, and constipation, of ordinary intensity, was superadded. The pulse became slow, soft, and small, and sometimes reached one hundred and twenty-eight beats per minute. Respiration between twenty and forty. Decided dulness near the top of the spleen, with some pain on pressure. Lungs, heart, and kidneys normal. Death came on the twenty-fifth day, no chills occurring during the last few days of life, but the vomiting, which had previously been controlled, recurred. The intellectual functions had continued normal. The diagnosis had been perityphlitis with generalized secondary peritonitis. The absence of icterus and enlargement of the liver had made the existence of abscess of the liver a matter of doubt. The autopsy revealed diffuse fibrinous and purulent peritonitis and perityphlitis, but there was in addition a secondary pylephlebitis, and a series of abscesses, as large as a cherry, in the upper aspect of the right lobe and the lower aspect of the left lobe of the liver, which had been masked by the extensive peritonitis. The perityphlitis was the original condition, but its cause could not be ascertained.

The second case was in a vigorous boy of twelve, the suppurative hepatitis following a typhoid fever of normal evolution. On the twenty-first day of the fever he was seized with persistent vomiting, which was supposed to be due to concomitant angina. On the twenty-seventh day there was a violent chill and a temperature of 41.1° C. Two days later pain in the upper portion of the region of the liver, with swelling in the painful region. Here, also, was dulness on percussion, which extended as far as the umbilicus, but no fluctuation, and no icterus. The spleen was not enlarged, nor were the epigastric veins dilated. The fever became intermittent after the third day of its appearance, with morning remissions. The patient died on the thirty-fifth day in collapse. The autopsy revealed intestinal ulcerations of a typhoid character, and abscesses of the liver of pylephlebitic origin. The pylephlebitis proceeded from suppuration of the ileo-cæcal glands. The right lobe of the liver was hypertrophied, adherent by its convex surface to the diaphragm, and upon this surface were eight or ten prominent nodules of a brownish-green color, and presenting fluctuation. There was no hypertrophy of the spleen. Only two cases of pylephlebitis occurring in children could be found on record by the author. In the third of this series of cases here reported there was primary suppurative hepatitis. It also occurred in a well-nourished boy, who had in succession a chill, cough, fever, night-sweats, and intense pain on the right side of the chest. There were also constipation and loss of appetite. Four weeks after the beginning of these troubles he came to the clinic, having an irregular remittent fever; an evening temperature ranging between 37.8° C. and 40.3° C.; pulse varying between eighty-eight and one hundred and forty, and respiration between thirty-two and fifty-six. On account of large pleuritic effusion the chest was punctured in the seventh intercostal space, and four hundred and fifty grammes of thick, greenish-brown, fetid fluid removed. After the puncture the dulness on percussion remained, but the heart rose somewhat from the position to which it had been depressed, the apex-beat showing in the fifth intercostal space, under the nipple. The dyspnœa remained, with œdema in the right eyelid and bogginess in the right thoracic wall. A portion of the sixth and seventh ribs were resected, but the pleural cavity contained only serous fluid. An exploratory puncture in the seventh intercostal space revealing the presence of pus, the ninth rib was resected and a pus-sac in the liver laid bare, which was as large as the two fists. The patient died three days later. At the autopsy it was found that the abscess extended from the posterior border to the median portion of the liver. In addition there was pleurisy with adhesions on the right side, and secondary fibrinous peritonitis. The vena portæ, vena cava, and biliary passages were normal, as were also the hepatic arteries. A. F. C.

Wassilewski: The Position and Limits of the Heart in Children. (*Arch. f. Kinderh.* [abstracted], viii. 3.)

The heart has a more horizontal position in children than it has in adults. The apex-beat, during the first four years of life, is to be felt in either the fourth or fifth left intercostal space, or in both at the same time, from one to two centimetres to the left of the *linea mammillaris.* Of eighteen hundred and twenty children, between the day of birth and the twelfth year of life, who were examined by the author (only normal hearts being included in the table), in only 0.6 per cent. of the cases was the apex-beat internal to the *linea mammillaris*, in 1.5 per cent. of cases it was upon the *linea mammillaris*, and in the remaining ninety-eight per cent. of cases it was external to it. In 43.3 per cent. the apex-beat was felt in the fourth intercostal space, in 21.5 per cent. in both the fourth and fifth spaces, and in thirty-five per cent. only in the fifth. The horizontal position of the heart in children is dependent upon the high situation of the diaphragm, and also the relation which the vertical diameter of the heart bears to its transverse; these diameters being the same during the first few years of life. The author agrees with Rauchfuss in attributing to the heart a small (absolute) area of dulness, but, relatively, a large one. The dimensions of the absolute area of dulness vary in children of the same age, and are especially dependent upon the relation of the borders of the lungs to the heart, and upon the presence or absence of pulmonary emphysema, deviations in the vertebral column, etc. Also, the so-called relatively large area of dulness depends upon the relation of the lungs to the heart, for it may not be possible to define the lower half of the left border of the heart if that portion is covered by a thick layer of lung-tissue. This area also varies in children of the same age, but varies less than the area of absolute dulness. In order to determine the entire superficial extent of the heart—that is, of that portion which lies next the anterior thoracic wall—palpation and palpatory percussion must be practised. Attention is called to the fact that in about half of all children there is a more or less pronounced dulness under the left clavicle, and extending almost to the second rib, being more perceptible at the inner than at the outer border of the bone, and also to the presence of moist subcrepitant râles at the same place. This dulness is explained by the presence of a small section of lung-tissue belonging to the left apex, in the vicinity of the heart. Other conditions which contribute to produce dulness over this area are the presence of the thymus gland, relative narrowness of the left bronchus, and a relatively small volume of the apex of the left lung. This explanation is the more rational since the dulness at the part in question disappears after deep inspirations, and because it becomes more pronounced if the heart becomes enlarged towards the left or assumes a relatively high position. The subcrepitant rhonchi which may be heard in this location are probably associated with atelectasis, and they disappear after deep inspirations have been taken. Similar auscultatory phenomena are also sometimes observed in children whose lungs are quite normal at the apex, in connection with enlargement of the lymphatic glands above the left clavicle, and in febrile conditions associated with rapid and superficial breathing. It is also sometimes observed in children who are entirely healthy, especially after sleeping. Similar physical signs are sometimes observed in connection with enlargement of the heart, exudations into the pericardium, and in cases in which a portion of the lung covers the apex of the heart and a portion of the left ventricle. A. F. C.

Sandoz: Hydrocephalus Internus in connection with Hereditary Syphilis. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1887.)

The probable influence of hereditary syphilis in the development of hydrocephalus internus is admitted by many writers among the many possible causes. Fournier has observed the frequent coincidence of syphilis in the father and hydrocephalus in the children, but without concluding that the latter is due to infection of a specific character. Others, like Diday, see no relation between the two diseases. No one, previous to the author, has attempted to describe with any degree of completeness the clinical evolution of the lesions of hydrocephalus in syphilitic children. Bärensprung has noted a few cases, however, in which there was coincidence of the two diseases, and these are related in connection with four which were seen by the author. He gives the following as the principal characteristics of specific hydrocephalus:

1st. Specific hydrocephalus may be congenital.

2d. Syphilitic affections of the skin precede the development of hydrocephalus.

3d. The symptoms of specific hydrocephalus, whether physical or functional, are those which are described in connection with congenital and chronic hydrocephalus.

4th. The progress of the disease is rapid in spite of specific treatment, but there are no acute febrile symptoms. The circumference of the head increases rapidly.

5th. The anatomical lesions of congenital and chronic hydrocephalus are also found in specific hydrocephalus, but there are also certain peculiarities, viz.:

a. Decided vascular injection of the meninges; decided dilatation of all the ventricles, especially the lateral ones.

b. The ependyma of the ventricle is invariably very vascular, thickened in certain parts, rough, and yellowish in color, as if covered with grains of sage; and the choroid plexuses are engorged with blood. These lesions of the ependyma have been noted by several different authors; Birch-Hirschfeld considering the inflammatory thickening of the ependyma and meninges as probably syphilitic in character; Steffen finding in a case of hereditary syphilis an inflammation of the choroid plexus and ependyma; and Virchow reporting a similar case.

The prognosis is doubtful. Death occurred in three of the author's cases in spite of treatment. Specific treatment appears, however, to have had a favorable influence not only upon the general condition, the affections of the skin and of the mucous membrane, but upon the hydrocephalus as well, which seemed to have reached a stationary condition after a course of treatment. The final proposition is that there is a syphilitic hydrocephalus which is either congenital or is developed in the earliest months of life. It is probably due to a specific inflammation of the ventricular ependyma and the choroid plexuses. A. F. C.

Klaatsch: Rötheln. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], January, 1887.)

Two epidemics of roseola formed the basis of the author's paper, the first of which occurred in 1866, the second in 1885. In the first, twenty-two children were seen, eleven of whom had had measles a short time previously, and two scarlatina. In the second, forty cases were seen, in about half of which measles had previously been present. The disease presented all the characteristics of a benign disease, the eruption appearing without prodromata, in the form of intensely red spots disseminated over the entire body. The eruption appeared under two different aspects, now consisting of small maculæ, resembling spots of red ink, and again forming larger spots, which were clearer at the centre than at the periphery, the latter forming a zone with a deep color. These spots did not have the round form which characterizes the eruption of measles, their borders were irregular, and between them were portions of healthy skin. Their number was sometimes so great, however, that the borders ran together, but even in such cases the lines of demarcation were not entirely obliterated. The eruption first appeared upon the face, where it was always the most intense, then upon the shoulders and the anterior surface of the arms, and finally upon the remainder of the body. The intensity of the redness usually diminished from above downward, so that the eruption was much less pronounced upon the legs than upon the trunk. In some cases certain regions of the body had no eruption, for example, the face was not infrequently spared; in others it appeared in the form of irregular patches, perhaps being confined entirely to the abdomen in the form of large, deep red spots. Sometimes there was a diffuse erythematous redness occupying the intervals between the spots, so that the appearance was that of scarlatina. As a rule the eruption of this disease never becomes so confluent as that of measles; but most frequently the spots are so close together that certain regions of the body appear to be covered with a red varnish or glazing. From these spots a certain number of papules containing a sero-purulent liquid may be developed.. Petechiæ were never observed in connection with this disease, and the eruption was rarely the occasion of pruritus. The duration of the eruption was shorter than that of measles or scarlet fever. The entire body was usually involved by it within a period of twelve hours, and it rarely lasted more than twenty-four hours. The average duration of the disease itself was three days, extreme cases extending to five days. In the average of the cases there was no fever, and when it was present it was of moderate intensity, beginning when the eruption appeared, and usually lasting only one day. The general condition was usually good. The complications were injection of the conjunctivæ, redness of the pharynx, and swelling of the lymphatic glands. Photophobia nor weeping were ever seen. In the bucco-pharyngeal cavity the redness was always uniform and limited to the posterior wall of the pharynx, the velum of the palate, the tonsils, and the most remote part of the vault of the palate. Pain in the top of the pharynx was never complained of. Intense swelling of the cervical and mastoid glands was of exceptional occurrence, but the axillary and inguinal glands were swollen in almost all cases. In robust children the issue of the disease is favorable, but it may be fatal in little children with weak constitutions, especially if complicated with bronchitis, pneumonia, or cerebral hyperæmia. It is only slightly contagious, and its period of incubation may be fourteen to twenty-two days, or even longer. The author does not think a benign disease like this should exclude a child from school for five weeks. A. F. C.

Soltman: Etiology and Area of Extension of Actino-Mycosis. (*N. Y. Med. Presse* [abstracted], January, 1887.)

A five-year-old boy acquired actinomyce by occasionally eating an ear of *Hordeum murinum*. The first actino-mycosis developed in the posterior mediastinal space, and implicated the pleura. Although it extended itself to the prævertebral cellular tissue, it first attacked the muscular tissue to the right of the vertebræ, and it was located in this region when the patient was first seen by the author. The boy was strong, and showed nothing pathological about his heart and lungs, but there was a diffuse phlegmonous inflammation upon the back, to the right of the vertebræ. An incision was made into the reddened skin, which had openings in it, giving it a sieve-like appearance; and, by the aid of pressure, a thick but not offensive pus was expressed, a cavity being left which contained a quantity of clear, yellow pus. A microscopical examination of the pus revealed the characteristic actinomyces in great numbers, their color being dark yellowish-brown or sulphur-yellow, and their appearance like grains of sand. The diagnosis, which had previously been made, was thus confirmed. The wound was scraped out and treated antiseptically, and in fourteen days it had apparently healed. A new accumulation soon appeared, however, which was treated in the same way as the first one. Before the second wound had healed two other accumulations were apparent. The left side also became implicated, the process continued to extend into the thorax, the right lung was attacked, then the vertebral bodies, next the ilio-psoas muscle, and in eleven months after the first phenomena of the disease were apparent, which was a year and a half after the wall-barley (*Hordeum murinum*) had been eaten, the child died in a marasmic condition. It is interesting to note that a portion of the elements of the barley was found in the pus which was evacuated by the first incision. The author expressed the hope that it would be possible to find actinomyces in the bodies of animals, and to find out by suitable experiments whether it represents the gonoid form of a higher class of fungi. A. F. C.

Bellamy: Symmetrical Gangrene (Raynaud's Disease) following Varicella. Death. (*Lancet*, April 9, 1887.)

The patient was a girl of four years. On the third day after the first varicella spots were noticed she complained of a sore spot on her right leg, and a small black patch was seen below the inner side of the knee. This rapidly extended to the foot, and the next day she was brought to the hospital. By this time a similar spot had appeared about the left ankle, and was extending upwards. Great pain was complained of in both legs, increased by pressure. The toes, on the right side, soon became affected, patches rapidly appeared in succession upon the left thigh, right forearm, crest of ilium, both cheeks, and conchæ of both ears.

Death took place two days after admission.

The most interesting facts revealed by the autopsy were a large opening in the foramen ovale; small hemorrhagic extravasations into the intermuscular planes of the gangrenous limbs, and in some places in the muscles themselves. The saphenous vein contained only a post-mortem clot. The gangrene had extended higher on the inner side than on the outer, an unusual circumstance. The great toes were unaffected. The blood-vessels were healthy. The hemorrhages were mostly in the cutaneous structures.

Dr. Barlow said the cases of varicella gangrenosa which he had seen began in the varicellar ballæ, quite differently from that in the case reported. Neither did the case resemble Raynaud's disease, but rather, he thought, was to be classed among cases of gangrene occurring with the specific fevers.

Gleason: Infantile Pneumonia and its Treatment. (*Chi. Med. Times.*)

Predisposing causes are either bronchitis, whooping-cough, measles, or occasionally smallpox, scarlatina, or erysipelas. Also direct violence to chest. Generally begins with a well-marked chill, followed by a febrile reaction. Skin hot and dry; bowels constipated; urine scanty and high colored; tongue usually coated white; cough dry, sharp, and deep. Auscultation gives in earlier stages a clear respiratory murmur, followed later by rough, blowing sound. At third to fifth day secretion is established by the inflamed structures and we get mucous rhoncus. At this stage percussion gives quite decided dulness. Cough now moist and loose. On ninth and eleventh day, if disease does not terminate by resolution, patient is annoyed by sense of oppression, as is shown by clutching its neck. Symptoms increase in severity, gray hepatization takes place, lung-tissue is destroyed, child becomes comatose and dies. Our treatment should be judicious and simple. First arrest inflammatory conditions, using aconite, veratrum, or gelsemium. Aconite is indicated when pulse is small and frequent and there is sense of oppression at throat; veratrum when pulse is full, circulation active, and lungs considerably irritated; gelsemium when there is considerable irritation of nervous system caused by determination of blood to brain. To produce diaphoresis use jaborandi or asclepias. To lessen difficulty of respiration, bryonia. If patient is dull and sleepy, pupils dilated and extremities cold, administer belladonna, and apply dry heat to extremities. Marked mucous rhoncus indicates lobelia, sanguinaria, ipecac, or spts. lav. com. Locally, flaxseed-poultice, mush-jacket, or compound powder of lobelia may be used with advantage, especially the last, which is to be applied on a cloth smeared with lard. When the inflammation is checked, tonic treatment is required. The air of sick-room should be kept moist by evaporation of a solution of vinegar or lime.

Semon: Hyperplastic Laryngitis from Syphilis in a Child Five Months Old. (*Lancet*, February 26, 1887.)

Specimens from this case were shown at the London Pathological Society. A fortnight after birth undoubted manifestations of syphilis made their appearance. Later the voice became very husky, the signs of laryngeal obstruction developed, and, in spite of tracheotomy, death took place.

No marked change was found in the upper part of the larynx, but below the cords the lumen was reduced to a mere chink by swelling and thickening of the mucous membrane, which terminated abruptly about three-quarters of an inch farther down. It was of a deep-red color. Microscopically the swelling consisted of the mucous membrane, thickened by the deposit of connective tissue and hypertrophy of the glandular tissue. There was no ulceration. Some increase in the connective tissue of the liver was present with small aggregations of leucocytes.

Line: Observations on One Thousand Cases of Scarlatina. (*London Med. Record* [from *Birmingham Med. Review*, March, 1887].)

Out of all these cases there were only fifty-nine deaths from all causes, and complications were responsible for nineteen of these. The mortality under five years of age was 10.5 per cent. Between two and four years of age scarlatina attains its greatest mortality; very young children and sucklings generally have a benign form of the disease. The youngest patient was thirteen weeks old, the eldest sixty-three years. The form most frequently met with was scarlatina benigna, with or without complications. These cases require an active treating at first, and the symptoms are generally severe; but there is no evidence of constitutional sepsis, and the disease never threatens to assume a serious type.

The variety known as scarlatina ulcerosa was but moderately frequent, and principally in patients under six. In these cases the tonsils are covered with foul, ragged ulcers, which continue after the eruption has subsided. Death did not take place earlier than the ninth day, while cases were often prolonged to the end of the third week, and occasionally, in case of relapse, death occurred as late as the end of the sixth week. Cellulitis of the neck occurs in these cases, and often a colliquative diarrhœa sets in, seldom influenced by treatment; nervous symptoms are marked during the last few days; the middle ear is also prone to suffer in this more than in any other form of the disease, and in nearly every instance coryza scarlatina was noticed. This characteristic rhinitis, while in the acute stage, presents no difficulty as a rule; the most troublesome feature is the tendency of the condition to recur, a slight purulent or sero-sanguinolent discharge remaining for a considerable period and being violently infective.

In very young children, when there is severe stomatitis or glossitis, it is sometimes necessary to feed by the rectum; in older patients the membrane lining the pharynx, together with the foul secretions from the tonsils, is often swallowed without producing any bad effect, save a slight diarrhœa, which it is not advisable to stop. The diarrhœal symptoms occurring during the first week when the fever is high and throat symptoms severe are best treated by mild mercurial purges.

Second attacks of scarlatina are rare, but the evidence is well supported that they do occur. The same may be said of relapses.

Dr. Jacobs, of Leeds, thinks three views may be taken of these so-called second attacks:

1. A mistake in diagnosis in one attack.
2. The second attack was a relapse from auto-infection.
3. The second attack was caught in the fever hospital, the first attack being mild and affording no protection.

Day: Habitual Constipation in Children. (*Brit. Med. Journal,* March 26, 1887.)

The causes were (1) a sluggish state of the muscular coat of the bowel; (2) a diminution of secretion from the mucous membrane or the liver; (3) improper diet.

The effects of constipation upon children were quite varied. Neurotic children would often go several days without appreciable disturbance; in bilious and plethoric, symptoms sooner appeared.

Prolonged constipation was apt to lead to disease of the cæcum, chronic inflammation, and thickening; dilatation of the bowel and even perforation might result. Highly nutritious food furnishing little residue conduced to constipation.

In treatment the first thing to be insisted upon was a voluntary effort made daily at the same hour.

Enemata were valuable when the rectum was blocked or the colon torpid. Malted foods in young children were useful. Of the drugs, strychnia and belladonna were among the most useful in imparting tone to the muscular coat, relieving spasm, and lessening flatulence.

An occasional mercurial purge was indicated where the bile was scanty. It should not be frequently repeated. Salines, massage, and nitric acid were each useful in some cases.

An examination of the rectum by the finger should be made where the constipation had long existed, to discover any congenital deformity, if such were present.

Suckling: The Pathology of Diphtheritic Paralysis. (*Birmingham Med. Review*, January, 1887.)

In many of its features this disease resembles alcoholic paralysis, but it is rarely the case that its symptoms are so unequivocally the result of peripheral neuritis.

The degrees of nervous disturbance after diphtheria may be grouped as follows:

1. The knee-jerk is frequently lost when no other symptoms are present.

2. In addition to the loss of knee-jerk there is ataxia with more or less general paresis, without any sensory alterations.

3. There may be absolute paraplegia with loss of knee-jerk without any disturbance of sensation and without alterations in electrical reactions.

The symptoms in these cases are those of an acute lesion of the cells of the anterior horns of the spinal cord. But, since recovery is so usually rapid and so complete, it is difficult to suppose such a lesion to exist, for nerve-cells do not recover from injury so easily as do nerve-fibres. The former when destroyed are not regenerated, while the latter are readily so.

4. In other cases of diphtheritic paralysis, sensory disturbances, hyperæsthesia, anæsthesia, tenderness along the nerve-trunks, and shooting pains are present. These cannot be due simply to a lesion in the anterior cornua of the cord.

It is more reasonable to suppose that the lesion in all cases is a peripheral neuritis. In injury to a mixed nerve it is well known that there may be paralysis without anæsthesia or electrical change when the injury is only a slight one.

The paralyses of ocular muscles and of the soft palate are of the most common occurrence, and these strongly support the explanation of peripheral neuritis.

The view that this is the pathology of diphtheritic paralysis is concurred in by Buzzard, Mendel, and Charcot.

The article concludes with the report of an exceedingly interesting case in an adult.

Hodge: Whooping-Cough complicated with Pulmonary Collapse and Extensive Subcutaneous Emphysema. (*Glasgow Med. Journal*, February, 1887.)

A little girl, aged three, was admitted to the hospital with severe whooping-cough; no history of the case was obtained. Two weeks later slight swelling of the right side of the face and the right chest in front were noticed, which on palpation gave the characteristic crepitation of subcutaneous emphysema. This steadily extended successively to the left side of the face, the left chest, the whole trunk, the upper extremities, where it seemed to follow the course of the vessels, then down the lower extremities.

The swelling of the face was so great that the features were obliterated and the eyes closed. Whitish froth came from the mouth; the dyspnœa was only slight; the cough not now very troublesome; there were no convulsions, and though lying quiet the patient seemed quite conscious. Punctures in the skin were made in places, allowing the air to find vent. She lived eight days after the emphysema was noticed. The autopsy showed the areolar tissue of the root of the left lung and the anterior mediastinum infiltrated with air. There was some pneumonia in both lungs, with collapse of the left lower lobe and interlobular emphysema.

Large blebs were present on the anterior surfaces of the lungs, and the subpleural tissue generally was infiltrated with air.

Jamieson: Case of Varicella Gangrenosa. (*Edinburgh Medical Journal*, January, 1887.)

This form of the disease is to be looked upon as an exaggeration of the ulcerative stage in the eruption.

A child of eighteen months was admitted on June 19; it was delicate and rachitic, and the history was strongly suggestive of syphilis. He had measles two months before, then whooping-cough, this being followed by varicella. The eruption had been out two weeks when he was first seen. It occupied the back, head, face, and right thigh. The largest ulcers were on the back; many were the size of a shilling, with red, elevated margin, punched-out edges, and a granular floor. There were besides circular lesions slightly elevated above the surface, rose-red at the margin, depressed in the centre, and dark brown.

Fresh vesicles continued to come out over the body until July 19; many being transformed into ulcers. The case eventually recovered in spite of complicating diarrhœa and broncho-pneumonia. It was the end of July before the ulcers had all healed.

Neumann: Clinical Studies concerning Congenital Syphilis. (*Arch. di Patol. Inf.* [abstracted], March, 1887.)

The principal conclusions of the author upon this subject are as follows: If the mother becomes infected a short time after conception occurs, the syphilis of the fœtus will be of a severe form. If the mother's disease is of long duration, the syphilis which is transmitted to the fœtus will be less severe, especially if the mother is subjected to antisyphilitic treatment. Tertiary syphilis in the mother has no direct bearing upon the question of conception unless the ovaries or the uterus have undergone gummous degeneration. If the mother should become infected with syphilis after conception, then it would be transmitted to the fœtus. Experience shows that syphilis may be transmitted from the fœtus to the mother, but not in the manner that is commonly mentioned by writers upon this subject. There are many cases in which infants have been born with all the necessary evidences of syphilis, while no sign of the disease is discoverable upon the mothers. It is still an unsettled question as to the particular month during pregnancy in which syphilis is transmitted from the fœtus to the mother. A. F. C.

Mracek: Hemorrhagic Syphilis in New-Born Infants (*Arch. di Patol. Inf.* [abstracted], March, 1887.)

For more than four years the author made a study of the anatomical lesions of syphilis, especially in its hereditary form. In the different organs in which changes were found hemorrhagic extravasations were frequent. Of one hundred and thirty-two children with syphilitic mothers who died in very early infancy, there were mild hemorrhages in one-third of the cases, but in nineteen the condition (hemorrhage) was so noticeable as to warrant the diagnosis that it was associated with syphilis in the new-born. In ten of the mothers secondary symptoms were still noticeable at the time of the puerperium; with the others there were cicatrices or other sequelæ which warranted the diagnosis of syphilis. In none of the cases had systematic antisyphilitic treatment been thoroughly carried out. The puerperium was passed without any disturbance, excepting in one case in which puerperal fever was present.

Of the nineteen children referred to only one was stillborn, but in four of the remainder there was very little vitality. The others were born at the normal period, ten of them living only a few minutes, and the remaining four surviving forty-eight hours. Autopsies showed the greatest diversity in the pathological condition,—hepatitis, perinephritis, infiltration of the lungs, lesions of the bones, etc. The vascular changes were, of course, quite marked in the cases in which hemorrhage had occurred. The veins of medium size were especially the seat of changes, their lumen being sometimes only slightly diminished, and at others nearly obliterated. In the arteries of corresponding size the adventitia showed degenerative changes, while the capillaries and vasa vasorum in the affected areas showed perivascular condensations. Analogous changes were found in the subcutaneous connective tissue of the spermatic cord, in the fissure of Sylvius, in the submucous tissue of the intestine, in the coronary sulcus of the heart, and elsewhere. No great importance was attached to the changes in some of the arteries. In all cases the extravasations of blood were multiple. In nineteen the subcutaneous connective tissue was affected, in eighteen the pleura and lungs, in ten the heart, in five the kidneys, liver, the adventitia of the carotid and other large vessels, and the retroperitoneal cellular tissue, in two the mucous membrane of the oral cavity. The extravasations were in the form of ecchymoses, which were produced by diapedesis from the small veins and capillaries.

Factors in producing the ecchymoses were local increase of pressure within the vessels, or general increase in the blood-pressure on account of special conditions in the circulation of the child, which may have been produced after birth. Serious hemorrhages were not discovered by the author either into the lateral ventricles or the medulla oblongata. A. F. C.

Tuczek: Hysteria in Children. (*Arch. di Patol. Inf.* [abstracted], March, 1887.)

The author defines hysteria as a functional affection of the cerebral cortex, which is especially characterized by exaggerated reflex excitability in respect to sensory, motor, psychical, and vaso-motor activity, and by sensory changes.

In the first of the cases narrated by the author a predisposing cause was heredity, to which could be added the fact that the education had been seriously neglected. A dislocation of the right foot must also be mentioned as an accessory cause. Contractures and some of the phenomena of trismus followed, which may have been due to improper treatment, also disturbances of deglutition, and in the power of speech, anæsthesia, insomnia, and profound psychical disorders, all of which disappeared with appropriate and rational treatment.

In the second case the etiological factors were neglect in education, psychical excitation, maltreatment, constant occupation near a fire, and abuse of alcohol. In this case also the disease began with psychical and motor disturbances, such as tremor, paresis, difficulties of speech, and difference in the excitability of the right and left facial. Then came hyperæsthesia, sensitiveness to pressure upon the vertebral column, vaso-motor disturbances, including pallor, subnormal temperature, and difference in the size of the pupils, trophic disorders in the skin, and decided slackening of the pulse.

In the author's opinion the attempts to cure hysteria by forcible means of any character not only do no good, but actually do harm. He thinks that institutions might be established in which hysterical children could be treated by moral means, and with good prospects of cure. As Gerhardt has said, it is the physician, and not his medicine, which will cure hysteria. A. F. C.

Darier: Broncho-Pneumonia as a Complication of Diphtheria. (*Arch. di Patol. Infan.* [abstracted], March, 1887).

The following conclusions are stated in the author's paper:

1. Among the complications of diphtheria broncho-pneumonia is one of the most frequent.

2. The causes which may determine its appearance are various and important. In addition to the ordinary causes, such as cold, etc., may be mentioned general intoxication from the disease, localizations of the false membrane, and tracheotomy.

3. It usually appears between the second and the sixth days of the course of the primary disease.

4. The general symptoms are of greater importance in making the diagnosis of diphtheritic broncho-pneumonia than the physical signs, so called.

5. The prognosis becomes the more grave the longer the complication continues.

6. The anatomical lesions of this condition are characterized by abundance of fibrin and hemorrhagic foci.

7. Two varieties of micro-organisms are found in the lungs: (*a*) spherical or oval micrococci arranged in chains; (*b*) bacilli resembling those which are constantly found in the pseudomembranous deposits of diphtheria.

8. On account of the great numbers and the method of distribution of the micro-organisms in the inflamed lobules, the following hypothesis is advanced: the bacilli reach the lobules and cause inflammatory action, which results in producing a medium which is favorable for the development of microbes. The bacilli multiply in this medium and cause suppuration in the lobules.

9. The influence of the general intoxication, about which there can be no doubt, must be taken into consideration in every case. The nature of the changes which take place in the blood in such cases is still unknown. A. F. C.

Le Gendre: Typhoid Fever in Children. (*Le Concours Méd.*, March 19, 1887.)

The views of Grancher upon this subject are expressed by the author, their expression being suggested by the death of a child eight months old from the disease. Its existence during the first period of life is questioned by many, but Grancher considers it unquestionable. It is not so rare a condition that it should be overlooked in the consideration of the diseases of early childhood. The infant in question had been brought up in the country upon the bottle. At the age of four months it experienced an attack of infantile paralysis of the paraplegic form. A few days after it was brought to the hospital it was attacked with varicella, from which it recovered in ten days. Then, together with several other children who were fed with milk from the same source, it was attacked with diarrhœa, the discharges being yellow and fetid. It had a temperature which ranged between 38° and 39°, the belly became tympanitic, and it died twenty days after the first appearance of the diarrhœa. The autopsy justified the diagnosis of typhoid fever, which had been made three days before death, and was suggested by the presence of three lenticular rose-colored spots (upon the abdomen ?). Ten or twelve of the plaques of Peyer were swollen, three or four of them being ulcerated, and the mesenteric glands were enlarged. Quite a number of cases of this disease are on record occurring between the ages of six months and two years, yet others between the ages of five and twenty-six days, and one case is recorded in which a seven-months' fœtus, living only half an hour after birth, had the characteristic ulcerations of the Peyer's patches. Parrot, J. Simon, and Bouchut are all sceptical as to the possibility of the occurrence of the disease during the first period of life. The principal peculiarities of the disease at this period are irregularity as to its symptomatology, brevity as to its evolution, and extreme gravity as to its prognosis. Among the means of treatment some are merely symptomatic. Thus adynamia, hyperpyrexia, and insufficient hæmatosis must be met by tonic treatment, for example, alcohol and quinquina, by salicylic acid, and by dry cups. Among the systematic methods of treatment may be mentioned the use of cold baths, which has been followed by very good results. Bouchard's method of treatment comprises four principal points,—namely, general antisepsis, intestinal antisepsis, antithermia, and alimentation. The treatment is begun by the use of a purgative, consisting of fifteen grammes of the sulphate of magnesium or soda, repeated every three hours. General antisepsis is to be obtained by the use of two centigrammes of calomel given hourly for four days. Intestinal antisepsis is to be obtained by the use of a mixture containing one hundred grammes of powdered charcoal (vegetable), one gramme of iodoform, and five grammes of naphthaline. This mixture must be carefully combined in a mortar and then suspended in two hundred grammes of glycerin, to which fifty grammes of dried peptone should be added. The result will be a black, semi-liquid magma, which will be absorbed in the course of twenty-four hours, the dose being a teaspoonful every two hours in a third of a glass of water. The large intestine should be cleansed morning and evening by the use of a suitable injection containing the borate of sodium or the hyposulphite of sodium. Eight baths should be taken daily until the temperature reaches 37.5° C. The temperature of the bath, at its commencement, should be two degrees lower than that of the patient. It should be reduced one degree every ten minutes by the addition of cold water until it has reached 30°, and it should be continued at this point for one-half or three-quarters of an hour. Quinine should be used as an adjuvant if the rectal temperature reaches 40° or 41°. During the first two weeks of the disease two doses of fifty centigrammes each, at an interval of three hours, may be given morning and evening, and during the later period of the disease one dose morning and evening. (The quantities mentioned are for adults, and should be lessened to suit the age of the child to whom they are administered.) The diet should consist of soup, barley-water, and, occasionally, a little wine and lemonade. Many physicians object to such large doses of quinine, fearing an injurious action upon the heart, and other undesirable results. Robin thinks the daily dosage of quinine should not exceed fifty or sixty centigrammes (for adults ?). He recommends, in addition, the daily use of two grammes of benzoic acid or four of the benzoate of soda (for adults ?), dissolved in lemonade. Graucher's treatment for children between two and fifteen years of age consists in the use of a purgative every three hours at the beginning of the disease, injections twice daily, consisting of five hundred grammes of water and five to ten of the borate of soda; if the tongue is dry, and there is tendency to constipation, two to four grammes of the salicylate of bismuth and two of calcined magnesia; plenty of fluids, in the shape of soup, barley-water, lemonade, and milk; if there is adynamia, alcohol and the extract of quinquina; cups, or flying-blisters to the sides of the chest, if there is excessive pulmonary congestion; warm baths if there is hyperthermia or nervous excitement; leeches to the mastoid processes if the cerebral symptoms are very decided. He also believes in the use of large doses of quinine both for its antiseptic and its antithermic effects, believing that the temperature indicates, to a certain extent, the degree of infection by microbes. If the temperature reaches or exceeds 40° he would give from fifty centigrammes to two grammes of quinine daily, and he regards it as almost a specific in its action upon the septic agents at work in typhoid fever. A. F. C.

Fournier: Lobar Pneumonia in very Young Children. (*Jour. de Méd.*, April 17, 1887.)

Frequent attempts have been made during the past few years to define with distinctness the points of differentiation between broncho-pneumonia and lobar pneumonia in early childhood, but the question does not yet appear to be settled. Some authors are of the opinion that at this period pneumonia most frequently assumes the lobar form, while others affirm that every inflammation of the pulmonary parenchyma at this period takes the form of broncho-pneumonia. Thus, Valleix considered that lobar pneumonia is very frequent in children under two years of age, while Parrot denied its existence entirely among them, and Damaschino and Cadet de Gassicourt considered it very rare and exceptional. Carron de Carrière, while admitting the frequency of broncho-pneumonia, has recorded a number of carefully-observed cases in which he considers that lobar pneumonia unquestionably existed. The differential characteristics of the two diseases are carefully outlined, and the question of diagnosis in the given cases is considered as not open to doubt. In his opinion broncho-pneumonia, in certain cases, may have the same violent initial stage as lobar pneumonia, with its high fever, dulness on percussion, and râle. In such cases there are confluent foci of inflammation indicating broncho-pneumonia, while the external signs have simulated those which belong to lobar pneumonia. This renders the diagnosis a matter of difficulty, but possible, notwithstanding, if the râles of bronchitis and foci of induration are found in the other lung. In the absence of these symptoms an examination of the chest alone will not be sufficient for a precise distinction. Another element then comes in, which is of absolute value, namely, the record of the temperature. In broncho-pneumonia the course of the temperature follows no definite type. The maximum may be reached by degrees or by a single leap. The fall of the temperature is usually sudden, the mercury may oscillate for some time about 38° C., then, with renewed congestion, suddenly rise, and as suddenly fall. Even in those cases which terminate in recovery this irregularity in the temperature is noticeable. In lobar pneumonia, on the other hand, the temperature phenomena are entirely different. The disease runs a regular course, and the fever suddenly diminishes after having indicated a temperature of about 40° C. for six or eight days. The cure is indicated by the presence of the crisis. The thermometric curve may therefore be relied upon as a means of differentiating between these two forms of disease when other means are insufficient. A. F. C.

Deligny: The Arthritic Diathesis in Childhood. (*Jour. de Med.*, February 13, 1887.)

A comparatively small number of children of parents who suffer from gout or rheumatism escape the influence of heredity in this direction. This fact may be observed from early childhood, and one is able to foresee in such children certain diseases which; under ordinary circumstances, are in store for them. In fact, the morbid phenomena which attend the arthritic diathesis are evolved in a certain chronological order, as it were, marking with some distinctness the epochs of childhood, adult age, middle life, and old age. The phenomena of the arthritic diathesis will not be confounded with those of the lymphatic and scrofulous diatheses, if the family history of the patient is duly considered. The differentiation between gout and rheumatism in children is often a very difficult matter. It should be remembered, however, that, of the two, gout is the more likely to be an inherited disease. The children of gouty parents are almost always vigorous and well formed, with good appetite, and, not infrequently, a decided obesity. On the other hand, the children of rheumatic parents are usually delicate, weak, and nervous. In both there is a great tendency to indigestion and excessive perspiration, and from the earliest period of life the skin shows a tendency to impetiginous or eczematous eruptions, and the mucous membrane to catarrh, angina, bronchitis, and coryza. At a later period a susceptibility to urticaria, eczema, lichen, epistaxis, and migraine is evinced, and there may also be an acute attack of rheumatism or gout. The eczematous or impetiginous eruptions may occur, in spite of the greatest care, through the influence of dentition or an improper diet. They may disappear and then reappear at the time of puberty. If the children are of gouty parentage, the eczema is usually moist, and appertains to the limbs, the hairy scalp, or the face; in the children of rheumatic parents it is usually of the papular variety, affecting the chest, the back, the axillæ, or the flexures of the limbs. These affections of the body may recur between the ages of twenty-five and thirty-five years, and at that period they are likely to be much more rebellious to treatment than in childhood. When angina and bronchitis occur in such children, they are apt to be intense in their attack and of short duration. The catarrhal attacks are also likely to be of an acute character, and less prolonged in duration than the same conditions in children of a lymphatic diathesis. Coryza is of greater frequency than either of the other morbid conditions mentioned, and it is probable that this very frequency has caused its appearance to be somewhat overlooked by those who have written upon the arthritic diathesis in children.

Epistaxis is the more common among children of the gouty diathesis, though Durosiez has referred to it as the first manifestation of the rheumatic diathesis in a child, and a premonition of the cardio-vascular disturbances which may be expected at a later period. Obesity may be manifested in infancy in these cases, but it is more apt to occur in early childhood. Migraine is most frequently observed between the ages of fifteen and twenty, but it sometimes occurs in early childhood, and it has even been mistaken for meningitis. Calculus is by no means infrequent, especially in gouty children. Gastro-intestinal dyspepsia is also common both early and late in childhood, with diarrhœa and vomiting, especially if there have been errors in the diet. A. F. C.

III.—SURGERY.

Egidi: Rapid Tracheotomy by the Method of Saint Germain. (*Gaz. Med. di Roma,* April 1, 1887.)

In being called upon to perform twelve tracheotomies during the past few months, he had always hesitated to follow the rapid method of Saint Germain, deeming it too hazardous, and considering that its dangers could be avoided by the slower method of Trousseau. The rapid operation being done by a single stroke of the bistoury there is danger of cutting the posterior wall of the trachea, or even the anterior wall of the œsophagus. By the slower operation such an accident could certainly be avoided, as well as some of the risks of hemorrhage. The operation of Saint Germain is indicated in certain cases, however, as the author recently had the opportunity of experiencing. The child in question was four years old, of robust constitution, and well nourished, and when seen for the first time by the author was already cyanosed as to his face and extremities in the asphyctic stage of croup. There was no enlargement of the cervical glands, nor exudation into the tonsils. The operation of tracheotomy was desired by the parents, and it was begun after Trousseau's method. Certain unforeseen difficulties required its abandonment, however, and the restoration of respiration as speedily as possible. The middle point of the crico-thyroid ligament was therefore fixed as quickly as possible with the index finger of the left hand, the larynx being steadied between the thumb and middle finger of the same hand, and the bistoury was quickly introduced at the middle point, an incision one and a quarter centimetres long being made. The incision was extended through the cricoid cartilage and the first two rings of the trachea, and the wound dilated with the three branched forceps of Laborde. This instrument was found less useful for the adjustment of the canula than the two-branched forceps of Trousseau. The hemorrhage was very slight. The patient died on the fourth day, the supposition being that the condition was diphtheritic infection and not croup as at first supposed, or else that the latter had occurred as a complication of the former. This experience convinced the author of the value and propriety of the rapid operation in certain cases, though its dangers must not be overlooked. The most decided elements of danger proceed from (1) hemorrhage; (2) entrance of blood into the bronchial tubes; (3) wounding the posterior wall of the trachea.

Should hemorrhage occur it would be an embarrassing accident, but it is seldom profuse, may stop spontaneously after respiration has been restored, or at most after the tube and canula have been adjusted. In any case in which tracheotomy is required, lengthening the operation by seeking to effect perfect hæmostasis may compromise its result. The entrance of blood into the bronchial tubes is not so dangerous as is commonly supposed. The blood is likely to excite coughing, which will result in its expulsion from the tubes. Should coughing not be excited, a soft catheter may be introduced into the trachea and the blood be sucked out; or the trachea may be irritated with a feather in order to excite coughing. The wounding of the trachea is certainly a grave accident, and can only be prevented by care in introducing the knife. The moment the trachea is entered, the escaping air will cause a sibilant sound and indicate that deeper penetration is unnecessary.

A. F. C.

Schmitz: Operations in Children for Vesical Calculus. (*Gaz. Med. di Roma*, April 15, 1887.)

The author's paper originally appeared in the *Archiv für Klinische Chirurgie*, and contains a table of ninety-five cases in which operations were performed by him during the past thirteen years. There were

41 cases of the high operation, with 15 deaths.
16 " " operation of Celsus, with 3 deaths.
13 " " lateral operation, " 4 "
18 " of lithotrity, with 5 cures and 2 "
7 " " button-hole operation (*bouttonière*.)

From this table it appears that the best results were obtained from the operation of Celsus, and the poorest from lithotrity. In eight of the cases in which the median operation was performed the hemorrhage was severe, the bulb of the urethra being injured on account of the size of the stone. This operation should be limited, in the author's opinion, to patients over eight years of age, and to calculi which do not exceed two centimetres in diameter. He thinks the lateral operation is to be preferred, as it involves less risk of laceration, and is usually followed by good cicatrization. The high operation is subject to a high rate of mortality, but this has become much lower since the introduction of antiseptic principles in surgical procedures. Of the author's first eighteen cases which were subjected to this variety of lithotomy, ten were fatal; of the remaining twenty-three only five were fatal. Such statements prove that want of success is often due rather to imperfections in the methods of operating than to the gravity of the operations themselves. His statistics for lithotrity are not at all satisfactory, and he thinks this operation upon children should be abandoned excepting in girls, and in cases of phosphatic calculi. A. F. C.

Cartaya: Surgical Treatment of the Reflex Convulsions of the Period of Dentition. (*El Progreso Gin. y Ped.*, January 10, 1887.)

For cases in which the use of modifying agents upon reflex action fails to produce the desired result, the condition being eclampsia occurring during the course of dentition, the author proposes the complete evulsion of the contents of the alveolus by which the convulsions are caused. Three cases are narrated in which this plan was successfully carried out, and two in which the results were not satisfactory. In the latter serious diseases were present as complicating elements, and in one of them asphyxia had become so pronounced that it should not be considered as having any bearing upon the value or want of value of the operation. It must be remembered that convulsions from reflex nervous action in irregular dentition are not of frequent occurrence, and hence that the causes of eclampsia must be carefully investigated before any operation is attempted. The operation consists of three steps,—after the jaws have been forcibly separated, and a five-per-cent. solution of cocaine has been applied to the gums covering the tooth or teeth which are about to break forth, and are causing the disturbance. The first step is to incise the gum which covers the crown of the tooth; the second is to dissect away the gum from the tooth, both anteriorly and posteriorly; the third is to introduce curved dental forceps and remove the tooth. The hemorrhage is usually small, and occasions little trouble. A. F. C.

Ferguson: Accident in Intubation of Larynx. (*N. Y. Med. Journal,* March 5, 1887.)

Diphtheria of three or four days' standing in child of three years. Prognosis very grave. Intubation undertaken, and an O'Dwyer's tube inserted on second trial. On withdrawing the "core" respiration was found entirely occluded, which state of affairs was but little remedied by withdrawing tube. Concluded that the false membrane had been displaced and acted as a valve to occlude the tube, and when this was withdrawn, the subglottic space. Tracheotomy was performed with immediate and complete relief, which seemed to support this theory. Child died thirty hours after, but without any return of dyspnœa or development of pneumonitis.

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Original Communications.

A CURIOUS CASE OF CONGENITAL DISPLACEMENT OF BOWEL.

BY EUSTACE SMITH, M.D., F.R.C.P.,
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NOT long ago I was asked to see an infant, a little boy of two months old, and advise about his diet and general management. The child was small, but the muscles, although spare, were firm, and the complexion was healthy. The liver and spleen were of normal size. The chest was well formed and symmetrical. The lungs showed no sign of disease: resonance was good on both sides, and the respiration, although a little weaker on the left side than on the right, was otherwise normal. The heart-sounds were clear but feeble. The site of the apex-beat could not be discovered; indeed, no cardiac impulse could be made out at any point of the chest-wall. The child took his food well, and seemed to digest it, but was often troubled with flatulence. His bowels acted regularly, and the motions were of ordinary appearance.

The infant was said to have had "thrush" soon after birth, and at that time his buttocks and perineum had been covered with a reddish rash, but he had never snuffled or been hoarse. At the age of nine weeks, as his nutrition was not quite satisfactory, a wet-nurse was engaged, and all artificial feeding was stopped. About this time it was noticed that the child's nares worked as he breathed, and that there was some recession of the epigastrium in inspiration. An examination of the chest discovered some dulness at the left base posteriorly. On the following day the whole lower half of the left side was completely dull to percussion, both at the back and in front, with a great sense of resistance. The respiration was weak and of faint bronchial quality. The nares still dilated widely at each breath, and at the same time the epigastrium sank in. There was, however, no lividity of face. The temperature, taken in the rectum, was normal. The same day the spleen was found to reach one finger's breadth below the margin of the ribs.

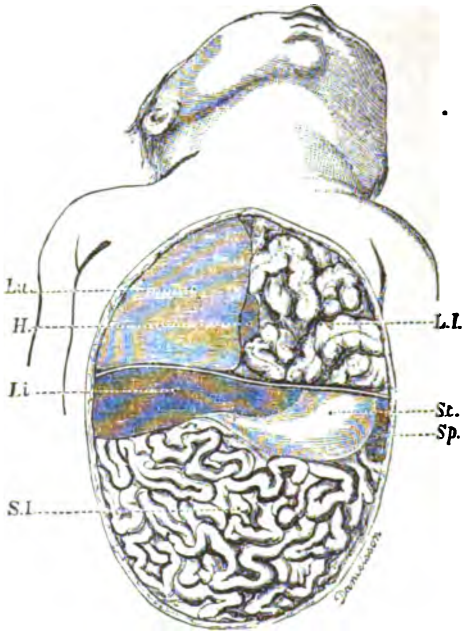
The child was ordered to take three grains of iodide of potassium three times a day, and the physical signs quickly improved. In a week's time the percussion-note had become normal on the left side; and the breath-sounds, although weak, seemed to be healthy. As resonance returned a faint superficial crackling sound was heard on one occasion in inspiration. This was thought to be pleuritic. Although the physical signs had become normal, there still continued to be moderate recession of the epigastrium at each breath. The spleen, also, could now be felt to reach three fingers' breadths below the margin of the ribs. This apparent enlargement of the spleen, combined with the history of "thrush" after birth, and the recent attack of what seemed to be pleurisy coming on without evident cause, for there had been no exposure to chill, gave rise to the suspicion of a syphilitic taint, and the child was ordered to take ten drops of the perchloride of mercury solution three times in the day.

The infant now began to suffer from attacks of abdominal pain, each of which was followed by a state of great prostration. I was present throughout the whole of one of these attacks. The child quite suddenly began to scream violently. His face was livid; his lips were blue; his eyes staring and wild with fear. He jerked his limbs quickly up and down, and scraped desperately with his heels upon the nurse's lap, as if he were about to spring to his feet. The infant was evidently in an agony of pain,—in pain far greater than I have ever seen in the worst case of flatulent colic. After about five minutes the pain seemed to subside, and the child sank back white and exhausted. His nares worked strongly; there was much recession of the soft parts of the chest in inspiration; and examination of the lungs showed considerable want of resonance over the left side, with feeble, hardly audible breath-sounds. There was no twisting inwards of the thumbs, contraction of the fingers, or other sign of nervous disturbance, and the fontanelle was not depressed.

The cause of these attacks was obscure. They seemed to be too severe for flatulent colic, and there was no constipation, or looseness, or other sign of intestinal irritation. Nor was the abdomen distended from accumulation of gas, either before or after the seizure. A hot bath and warm applications to the belly seemed to give some ease, and if there was escape of flatus, the child appeared to be relieved; but many different varieties of antiflatulent remedies were given without apparent influence in preventing the onset of the pains. The diapers were searched for signs of uric acid sand or blood, but none were discovered.

The attacks of pain came on at first every other day. They were followed on each occasion by the same exhaustion and dyspnœa, with signs indicating that a very insufficient amount of air was entering the left side of the chest. On the following day the child, having recovered from his collapsed state, looked bright and healthy, and the physical signs of the left lung, except for a certain weakness of breath-sound, were again natural.

The attacks very soon became more frequent. They recurred every day, then several times a day, so that the child had little time for recovery before the pains began again. In one of these intervals, as the infant lay pale and exhausted, his respiration was 80, with considerable recession of the epigastrium in inspiration; pulse 142, very feeble; abdomen rather flaccid, easily depressed; spleen three fingers' breadths below the ribs; liver two fingers' breadths; left kidney distinctly felt; elasticity of skin somewhat impaired. The child was under the influence of a narcotic, and the eyes could be seen, under the half-closed lids, to be divergent; but still the arms were jerked uneasily at intervals as if from pain. Examination of the chest discovered the now familiar dulness of the left back, with faint, distant breath-sounds. The bowels had been regularly relieved, and the last motion was greenish and slimy-looking, but had been passed without any straining or pain. Soon afterwards the colicky seizures returned with great violence, and the child died exhausted.



L.I., large intestine; S.I., small intestine; Lu, lung; H, heart; Sp., spleen; Li., liver; St., stomach.

On examination of the body all the organs were found to be perfectly healthy, but there was a congenital deficiency in the ligamentum arcuatum externum on the left side of the diaphragm. In consequence there was left a rounded opening of about one inch in diameter. Through this aperture the whole of the large bowel had passed into the left side of the thorax. The left lung had evidently never been expanded from birth, for it lay—a thin, bipartite strip—flattened against the spine. The cæcum had remained in the abdominal cavity, and lay just below the diaphragm; but the rest of the colon, as far as the middle of the sigmoid flexure, had passed into the chest. This displaced portion of intestine was of perfectly normal color and appearance. The left pleura also was quite smooth, and showed no trace of inflammation. The heart lay underneath the anterior border of the right lung, considerably to the right of its normal position. On the left side the diaphragm was quite flat, so that the spleen was pressed downwards from under cover of the ribs.

This case is one of great interest, not only from the rarity of the malformation, but also from the curious symptoms to which the displacement of a portion of the abdominal contents gave rise. A somewhat similar instance of malposition of viscera has been described by Dr. John Phillips as occurring in his practice, and is figured in the *Archives of Pediatrics* for January, 1886; but in that case the opening in the diaphragm was large enough to allow of the passage of the stomach, part of the small intestine and colon, and half the left lobe of the liver. Neither of the lungs had been expanded after birth, and the infant only lived for twenty minutes.

In my case it was said that at birth there had been a difficulty in the establishment of respiration, but that the child had afterwards given little trouble, although some anxiety was excited by the slowness with which he grew and gained weight. When he first came under my notice, although I examined the infant from head to foot, I found nothing to rouse suspicion. Resonance over the left side of the chest was good, for the air contained in the bowels imitated closely enough the normal, rather exaggerated resonance of the chest common to this period of life. The breath-sounds, conducted from the right lung, could be plainly heard over the left chest, although they were noticed to be weak. In spite of many attempts to ascertain the site of the heart's apex, no definite impulse could be detected. Examination of the body showed this to be due to the position of the heart, which lay underneath the border of the right lung, and was almost completely covered by it. I remember at the time thinking the absence of impulse remarkable, and was at a loss to explain it.

The close imitation of an attack of effusion into the left pleura is another point of interest. The complete dulness of the left side, beginning at the base, and rising on the second day half the distance to the apex, coupled with the great sense of resistance and the faint bronchial breathing, deceived me completely; and when I found the dulness gradually diminish from above downwards, and heard the faint superficial crackling sound so similar in character and quality to the pleural friction of childhood, I never doubted that I had to do with a case of pleurisy. These physical signs must have been the consequence of fluid, but of fluid contained in the bowel which had taken the place of the left lung.

When the attacks of abdominal pain began, their extraordinary severity marked them at once as something quite apart from ordinary flatulent colic. There was a look of terror in the child's eyes as he screamed such as one rarely sees in so young a patient. Unable to explain the symptom otherwise, I was driven to suspect the passage of a calculus, but no trace of uric acid sand could ever be discovered on the diapers. Looking back upon the case with knowledge derived from actual inspection of the parts, it is evident that the suffering caused by the bowels working to force their contents through the constriction resulting from the narrow opening in the diaphragm must have been dreadful indeed. It is difficult to say why the pains were not present earlier in the case, for the unexpanded state of the left lung seemed to indicate that the pleura of that side had always been occupied by the displaced intestine. Apparently the colic was not due to the presence of flatus. The dulness noticed over the left back after each attack of pain showed that the intestine at that time contained fluid, and it was no doubt the presence of this fluid, and the obstacle to its passage set up by the constriction at the seat of hernia, which excited the bowels to such exaggerated and painful contraction.

ENTERIC FEVER IN A GIRL AT THE AGE OF PUBERTY; DEATH AT THE END OF THE FIRST WEEK FROM INTERCURRENT FULMINANT PERITONITIS OF PELVIC ORIGIN.

BY J. C. WILSON, M.D.,

Philadelphia.

TYPICAL enteric fever—the classical typhoid of the text-books—is often seen in early adult-life; but variations from this type, more or less widely aberrant forms, are quite as common. At the extremes of the age of greatest liability, namely, in early and in advanced life, the typical forms rarely occur, and it is only by the light of knowledge derived from pathological anatomy that infantile remittent and endemic adynamic fever of aged persons have come to be recognized as belonging to the general group of the forms of enteric fever. Broadly generalized descriptions are necessary for purposes of instruction, but they are misleading in practice. No dictum of authority has created more confusion at the bedside than the famous "typical temperature-curve of enteric fever" of Wunderlich. I do not hesitate to say that this curve is much less frequently met with than variations from it. Departures from the type in the infectious diseases may be due to variations in the intensity of the infection, the degree of exposure, the stage of the epidemic, the susceptibility of the individual, his general ability to withstand morbid influences, his previous state of health, and the like; or they may be due to declared constitutional or visceral disease, intercurrent maladies, and complications. It occasionally happens that the departure from the type is so wide that, in the absence of the pattern set by other cases, as in local or house-epidemics, the clinical diagnosis is impossible. Such a case is the one I am about to describe. Its publication appears to be warranted equally as illustrating the impossibility of bedside diagnosis in the early stages of certain cases of enteric fever, and a rare, perhaps unique, association of morbid conditions in a child.

A. W. R., a large, precociously-developed girl, eleven years and eight months old, came under my observation for the first time in her last illness on the morning of April 24, 1887. She had been from infancy a remarkably healthy child, and had escaped to a great extent the ordinary ailments of childhood. During the past winter she had been somewhat languid at times, more easily fatigued than before, had suffered from occasional headache and pain in the back. It was observed also that her abdomen was at times larger than usual, so that her ordinary loosely-fitting clothing became uncomfortably tight. These symptoms were not severe enough to occasion uneasiness on the part of her mother, and she was kept at school. At the beginning of March she menstruated for the first time. The discharge was said to have been unaccompanied by pain, normal in appearance, and rather free in quantity. It continued about five days. As it ceased there was a good deal of headache, not localized, some nausea, loss of appetite, and general malaise. I saw her at this time, and prescribed sodium bromide, a simple diet, longer hours of rest in bed, shorter hours at school, and measures to secure greater regularity of the bowels than existed. There was at this time neither pain nor tenderness in the pelvic region. Four weeks later the catamenia again appeared, as before painlessly. On this occasion the quantity was slight, and the duration only two days, but the patient seemed to be weaker than before, and suffered from the symptoms already described. From this time she continued to be weak and languid, complained of more or less continuous headache, and went to school irregularly. Two weeks from this second period a very abundant flow set in and continued for nearly a week. Upon its subsidence, leucorrhœa, a symptom not before observed, was noticed.

On April 14 she "took cold," complained of sore throat, was treated by household remedies, and in two or three days was again able to go to school. Headache, worse towards night, was thenceforth present, and it was observed for the first time—on the fifth day before I saw her and the sixth before her death—that she was feverish. She was, nevertheless, not regarded by the family as ill, and was allowed to go about the house.

Sunday, April 24, her mother having administered a small dose of castor oil the evening before, she was suddenly seized before daybreak with violent pains in the lower part of the abdomen upon the left side, nausea, vomiting of greenish fluid, frequent watery diarrhœa, and great restlessness and agitation. So far as I could learn, there was no chill. I found her, some hours later, very restless and excited, constantly vomiting and retching, thirst urgent, tongue dry and red, abdomen moderately distended and very tender. The region of greatest tenderness corresponded to the seat of greatest pain,—namely, just above Poupart's ligament on the left side. Both pain and tenderness were less marked in the ileo-cæcal region than at any other point. Pulse 140, small and feeble; respirations 40, shallow; temperature 103° Fahrenheit; features pinched, expression haggard. Small amounts of urine have been voided with the stools and involuntarily in the bed. Under the influence of morphine hypodermically she rallied slightly, became more quiet, and after a time was able to retain small quantities of iced brandy. Light flaxseed poultices were applied, and one grain of the aqueous extract of opium in suppository given every third or fourth hour, according to her condition. After some time she was able to take at long intervals tablespoonful doses of iced milk and lime-water, equal parts. In other respects her condition remained unchanged. The evening temperature reached 104° Fahrenheit.

The following morning, April 25, the temperature was the same; the pulse was now very feeble and thready; extremities cool; mind wandering; there had been a little light sleep in snatches. During the morning of Monday the patient had a severe, prolonged, general convulsion, followed by copious vomiting of fluid resembling coffee-grounds, and at five P.M., thirty-six hours from the onset of pain, she died.

Necropsy, fifteen hours after death, performed by Dr. A. H. P. Leuf.—The body was well nourished and almost fully developed. It appeared to belong to a person of about seventeen or eighteen years of age. The complexion was dark. Pubic hair was abundant, mammæ developed. Abdomen was distended and tympanitic. The omentum was perfect, covering all the viscera below the transverse colon, and enveloping them on either side. Its small vessels were well injected, as were also those of the abdominal walls. The injection was most marked below. The omentum was adherent to the fundus and back of the uterus, to the left Fallopian tube, and the sigmoid flexure and upper end of the rectum. The mesentery was injected, as were also the small intestines. It contained many enlarged lymphatic glands of firm consistence. Some were fully two centimetres in length. Greenish-yellow pus was found in moderate quantity in the bottom of the pelvis. Both ovaries, Fallopian tubes, and infundibulæ, with fimbriated extremities, were intensely congested and markedly œdematous. The left was worse than the right. They were deep purple in color, and parts of the left tube looked as though they would soon have become gangrenous. The peritonitis extended up as high as the diaphragm, being perihepatic and perisplenic. Both ovaries were soft, slightly larger than normal, and multicystic. The small intestines contained yellowish muco-pus, and showed marked enlargement of its lymphoid follicles. Throughout its whole extent the solitary glands were easily discernible. Beginning in the lower part of the duodenum, the agminated glands showed a decided increase in size. They were mostly very pale, but here and there showed marked injection. In the lower part of the ileum a few had begun to ulcerate, and also some of the solitary glands. At ileo-cæcal valves there were several round ulcerations and one irregularly-shaped one, due to a coalescence of some round ones.

The spleen was enlarged and soft in consistence. The bladder was empty, about eight ounces of slightly albuminous urine having been withdrawn by catheterization an hour before death. There were no lesions of the vagina or external genitalia.

Aside from the peritonitis, which was the immediate cause of death, there were two sets of lesions: first, those of an acute double salpingitis, which was the point of departure of the peritoneal inflammation, and, second, those of enteric fever at the beginning of the stage of ulceration,—namely, at the end of the first week or early in the second week.

These two sets of anatomical changes correspond accurately with the history of the case. Precocious sexual development, early, irregular menstruation, pelvic pains, leucorrhœa, irregular headaches, and increasing lassitude, on the one hand, are conditions which indicated at first irritability, then positive disease of the pelvic organs; while, on the other hand, for some days before the final illness there had been observed the symptoms of an insidiously developing infective process,—namely, persistent headache, aggravated towards night, loss of appetite, general malaise, increasing fever.

The obvious diagnosis of acute explosive peritonitis was less important as influencing treatment than the recognition of its cause. In view of the clinical history as obtained when I was consulted, the possibility of latent or walking enteric fever with intestinal perforation at once suggested itself. Perforation is most common later in the course of the disease, during the third, fourth, or fifth week. But Pennock mentions a case in which this accident happened on the eighth day; Murchison one in the London Fever Hospital in which it occurred on the ninth day; Goodridge one on the eleventh, and Louis one on the twelfth day. Murchison states that peritonitis may arise in consequence of propagation of inflammation from the mucous to the serous coat by continuity, without perforation, before ulceration has commenced, and even during the first week of the disease. Peritonitis thus caused is, I believe, rarely, if indeed ever, attended by that degree of intensity *at the onset* which my case presented.

As against enteric fever with perforation were the following facts: absence of epistaxis, of rose-spots, of dilatation of the pupils, of diarrhœa. The enlargement of the spleen, which was suspected from percussion, could not be well made out on account of the tympany and tenderness. Furthermore, there was less pain and less tenderness in the right iliac fossa than elsewhere, and these symptoms had their point of greatest intensity on the left side just above Poupart's ligament. This fact in itself gave color to the suspicion, likewise fully warranted by the previous history of the patient, that the peritonitis might have originated in some lesion of the pelvic viscera.

Between these two views, which were laid before the friends of the patient, it was impossible to decide.

The question of the propriety of performing laparotomy was fully discussed with Professor D. Hayes Agnew, who kindly saw the case in consultation with me. It was decided in the negative in view of the uncertainty of the cause of the peritonitis, the possibility of the coexistence of enteric fever with some pelvic trouble (as proved to be the case), and finally, because of the intensity of the symptoms and the evidences of profound constitutional disturbance from which there was no tendency to reaction.

CHOLERA INFANTUM.

BY SAMUEL S. ADAMS, A.M., M.D.,
Washington, D.C.

As there seems to be a diversity of opinion in regard to the nature, etiology, and symptomatology of cholera infantum, and believing that it is too frequently confounded with the ordinary summer diarrhœas of infants, it seems necessary to define the disease so that its peculiar characteristics can be better discussed.

DEFINITION.—Cholera infantum is the least frequent and most fatal of the summer diarrhœal diseases of infants. It occurs during the hottest months of the year, most often among artificially-fed infants under one year of age, at or about the time of the eruption of the first teeth. It is characterized by the sudden onset of violent vomiting and retching, with frequent, profuse, liquid stools, and attended with rapid emaciation and exhaustion.

Frequency.—Many physicians do not differentiate this disease from the severe types of inflammatory diarrhœa, and some even confound it with non-inflammatory diarrhœa. If the proper significance be given to it, it would be much less frequent than it is shown to be by the mortuary reports of cities. In examining the reports of the health officer of the District of Columbia one is led to believe that it is almost as frequent as the other diarrhœal diseases of infants. Personal inquiries of quite a number of the leading practitioners of this city have confirmed my own opinion that it is a very infrequent disease in Washington. An examination of the records of the Children's Hospital of this city demonstrates its infrequency, for during the seventeen years of its existence but five cases have been recorded. A further examination of the clinical histories of these cases demonstrated that the diagnosis was not warranted in a single instance by the recorded symptoms. An analysis of the mortuary statistics of this city will, I think, prove conclusive evidence of the looseness in returning the causes of death. During the period from 1879 to 1886, inclusive, there were 749 white and 721 colored (1470) deaths from cholera infantum, which were not included in the other diarrhœal diseases. Of the 1470, 18 white and 7 colored (25) occurred in hospitals, dispensaries, and other public institutions, making the deaths in private practice number 1445. During the same period the deaths from the other diarrhœal diseases, and not confined to childhood, were 761 white and 868 colored (1629). Of the 1629, 138 white and 106 colored (244) occurred in hospitals, dispensaries, and other public institutions, making the mortality in private practice 1385. From these figures it would seem that cholera infantum was not only the most fatal, but also the most prevalent of the diarrhœal diseases. A singular fact is that, in spite of its alarming frequency, only 25 deaths out of 1470 are charged to public institutions, while of the 1629 deaths from the other diarrhœal diseases the public institutions are charged with 244. Two of the hospitals draw their material from the poor of the north, northwest, and northeast sections of the city, and the Central Dispensary draws a much larger number from the central, western, southern, and southeastern sections; but still only 25 deaths from cholera infantum have been charged to these and a few other public institutions (including St. Ann's Foundling Asylum) during eight years. Dr. Magruder, of the Central Dispensary, and the gentlemen connected with the Children's Hospital have assured me that their experiences accord with the number of deaths charged to the public institutions by the health officer. From these data it is manifest that physicians of the numerous eleemosynary institutions of this city regard cholera infantum as a very infrequent disease. During my own service of eleven years in the Children's

Hospital I have never met with the characteristic symptoms of the disease.

Nature.—I believe the disease is entitled to a distinct nosological position, and that it is not simply a modification of the ordinary diarrhœas. I now believe it to be due to a specific poison capable of producing this disease only. I do not agree with J. Lewis Smith, that the process is inflammatory because the fever is so high. This elevation of temperature may be due to internal congestion due to vascular relaxation. I do not think the hypersecretion comparable to that which occurs in inflammatory conditions of the mucous membranes, but believe it is due to some active poisonous agent which exerts a paralyzing effect over the vaso-motors of the general capillary system.

Etiology.—The disease occurs as frequently in one race as in another, and in the rich as well as the poor. It is most prevalent during those months when the temperature is highest, but may occur in any month. It prevails mainly in the cities, but occasionally occurs in the country.

It most frequently occurs among the infants in overcrowded dwellings, where the air is laden with germs of animal and vegetable decomposition, and especially in those that are bottle-fed. Consequently impure air, heat, uncleanliness, and catching cold may be considered the predisposing causes. I do not believe that any one, or all, of these conditions is capable of producing cholera infantum.

The prime etiological factor is, undoubtedly, the ingestion of poisonous food. The disease is certainly rare in breast-fed children, although they are subjected to the same unsanitary conditions as their bottle-fed neighbors. If heat, moisture, and animal and vegetable decomposition are capable of producing such changes in the infant's organism, then why does the breast-fed infant so often escape? That these conditions exert an influence in rendering the infant's system susceptible to the reception and development of the specific poison seems rational. Vaughn has probably isolated a poison, tyrotoxicon, which will in great measure account for the diarrhœal diseases in general; but although in many cases it produced marked effects, it does not appear to have the virulent effect one would expect from the specific poison of cholera infantum. To my mind it is about clear that the disease is induced by poisonous milk. The poison may be developed in the alimentary canal by the conditions that favor fermentation; but from the symptomatology I do not think we are warranted in assuming that this poison is solely due to fermentation. If so, why do we not have more cases of cholera infantum in the summer months, when a vast majority of bottle-fed children suffer from fermentative dyspepsia? It is not a weighty argument against the claim of specificity to say that the poison of cholera infantum has not been isolated. The poison of Asiatic cholera has never been isolated, but few would dare to deny its peculiar nature. Although not yet convinced, I incline to the opinion that cholera infantum should be classed with the miasmatic-contagious diseases: that it is due to a *contagium vivum* which is transmitted from infant to infant by undergoing a miasmatic transformation after its rejection from the first and its reception by the second. Dentition should be rejected as an etiological factor. That this physiological process may render the infant more susceptible to the poison seems probable, but that dentition *per se* is a cause of disease I do not admit.

Morbid anatomy.—The absence of any uniform anatomical changes renders the pathology of the disease a matter of doubt. Those who contend that the process is an exaggerated inflammatory condition are content to base their opinion upon the slight softening of the mucous membrane and enlargement of the follicles, with occasional ulceration of Peyer's patches. But, as these changes are not always found in the most aggravated cases, this opinion is hardly tenable. Because the cholera infantum may be succeeded by entero-colitis which proves fatal and exhibits the morbid appearances of a pre-existing inflammation is not a sufficient proof of the inflammatory nature of the primary disease. So far as I have seen, all the appearances of change are such as would be produced by rapid decomposition. The profuse watery discharges which so rapidly drain the system of its fluid constituents would favor the view that the sympathetic and vaso-motor nervous systems were overcome by the *materies morbi*, and that there is a relaxation of the vascular system. Until something more definite is shown I shall not rest satisfied with the inflammatory nature of the disease.

Symptomatology.—The infant may be apparently healthy, or may have had a slight intestinal catarrh, when it is suddenly seized with violent vomiting and purging. The vomited matter at first consists of any food that may be in the stomach, later a serous fluid is expelled, and finally the infant may retch when there is nothing to eject. The stomach not only rejects food, but everything. The stools, at first fæcal, soon become profuse and liquid, numbering sometimes twenty or even forty in the twenty-four hours. They are expelled with considerable force until late in the disease, when they become small and seem to escape without any effort. Pain and straining are but rarely present. The fever is often high, sometimes reaching 107°, 108°, or 109° F. The anterior fontanelle is soon depressed. The pulse, small, rapid, and compressible, soon becomes imperceptible. The urine diminishes, and is finally suppressed. The head and surface are hot and dry until the stage of collapse, when they become cold and clammy. Emaciation and exhaustion are so rapid that in a brief period the infant may be reduced to a mere skeleton. Late in the disease jactitations or general convulsions may occur.

Diagnosis.—This complexus of symptoms is so entirely different from that of the ordinary summer diarrhœas of children as to entitle the affection to a clinical distinction, but all the forms of summer diarrhœal diseases of infancy are too generally classified as cholera infantum. In some instances of severe cases of summer diarrhœas I am inclined to the belief that the diagnosis of cholera infantum is made by those who know better from purely selfish motives. In such cases, if the patient recover they are filled with glory, and if it die, the laity are charitable enough to say that it could not be helped. There may be some excuse for failure in differentiating it from sunstroke, but there is none for confounding it with the ordinary summer diarrhœas. In order to give the points of similarity and those of differential importance, I will compare it with a severe case of entero-colitis:

CHOLERA INFANTUM.	ENTERO-COLITIS.
Onset sudden.	Usually preceded by simple diarrhœa.
Vomiting violent, persistent, uncontrollable; consisting of food, then serum, and finally persistent retching.	Vomiting severe; consisting of food. Seldom retching when stomach is empty. Usually controllable.
Stools profuse, fluid, and frequent. Contain fæcal matters at first, but soon become serous. Odor musty, if any. Number twenty or even forty in the day. Expelled with great force.	Stools small and variable in character. Feculent, then muco-feculent, and finally muco-sanguinolent. Number ten to twenty in twenty-four hours. Sometimes offensive.
Seldom pain or straining.	Usually pain and straining, with only a slight discharge or only a stain.
Abdomen usually flaccid.	Abdomen usually tense and tympanitic.
Fever very high.	Fever seldom above 105° F.
Fontanelle depressed.	Fontanelle not depressed until very late.
Pulse rapidly becomes imperceptible.	Pulse remains good for some time.
Emaciation and exhaustion rapid.	Emaciation and exhaustion slow.
Urine suppressed.	Urine seldom suppressed.
Convulsions rare.	Convulsions uncertain.
No lesions.	Inflammatory lesions.

Prognosis.—The prognosis in all cases should be very guarded. Collapse may occur when least expected, and the patient may get over the cholera infantum and die of inflammatory diarrhœa. Those who are the best provided with the comforts of life stand the best chances of recovery.

Treatment.—Prophylaxis consists in removal during the hot summer months to roomy apartments situated in healthy, cool, and elevated regions of country, or to the sea-shore, where pure, fresh air and good cow's milk can be obtained. The milk from a well-kept and carefully-fed herd should be delivered morning and evening. Those infants whose parents cannot afford to take them out of the city should be taken to the parks or more cleanly streets for two or three hours in the morning and evening. As the disease is most disastrous to artificially-fed infants, great care should be exercised in the quality, quantity, and preparation of the milk. The food should be limited absolutely to milk, and, if possible, to cow's milk. Some seem to have had good results with the various prepared foods, but my experience with them has not been favorable; consequently I prefer cow's milk. Sweet cow's milk can usually be obtained twice a day, and, if it is properly prepared, it will be digested and assimilated. As soon as it is delivered it should be scalded (not boiled) with the requisite amount of boiling water, and then put in a cool place. Lime-water should be added in the proportion of one drachm to two ounces of milk. When it has finished nursing, the bottle and nipple should be thoroughly cleansed and soaked in an alkaline water until the next feeding. It should be bathed in water at a comfortable temperature about every six hours. Judgment should be exercised in clothing the infant, as too many clothes may do more harm than too few. The best plan is to dress it to suit the variations in atmospheric temperature.

The usual precautions of personal and domiciliary hygiene should be observed.

To control the vomiting and purging usually taxes the patience and the resources of the physician. Unless these are at least mitigated in a few hours, death is imminent. The stomach not only rejects food but everything, so that for a few hours all attempts at feeding should be abandoned. The greatest danger is from the rapid loss of the fluid constituents of the body. These should be replenished as far as possible, by administering cool water and pellets of cracked ice in small quantities at short intervals. Thirst is intense, and attempts to allay it should be frequently made in spite of the vomiting, for some of the water may be absorbed, and it will also have a sedative effect upon the irritated stomach. To quiet the stomachal irritability I know of nothing superior to creasote or carbolic acid, half a drop in a drachm of lime-water every two hours. In many cases rice-water in small quantities will be retained when every other fluid is vomited. Rubefacients of mustard or cloves may be applied to the epigastrium as counter-irritants.

To check the diarrhœa, I have found bismuth subnitrate in cinnamon and lime-water the best combination. In order to derive a good result the bismuth should be given in three-grain doses every two hours to an infant between four and ten months old, and five grains from the tenth to the eighteenth. In some cases, where the bismuth fails, benefit may be derived from lead acetate dissolved in acetic acid and lime-water; enough of the acid should be added to make a perfectly *clear* solution; creasote or carbolic acid may be added to allay vomiting. Both of these mixtures exert a soothing effect on the irritable stomach. Not much benefit is to be expected from the vegetable astringents.

In all cases the condition of the anterior fontanelle is my guide for stimulating. As long as this is depressed I do not hesitate to continue, or perhaps increase, the stimulant. Children bear stimulating surprisingly well. For this purpose I use whiskey or brandy, and sometimes camphor. In too many instances the stimulation is put off until the infant is too ill, or harm is done by leaving it to the discretion of the nurse, when too much is given. In extreme cases ether may be given hypodermatically.

As antipyretic measures I use the sponging with cool water, or whiskey and water, or bay-rum and water. I do not favor the general bath. During this cooling process care should be taken to apply to the infant's head cold wet cloths, which should be frequently changed.

Of the opiates I prefer the camphorated tincture, because it is more certain in its action and more easily controlled.

If there is jactitation or convulsions I rely on the potassium bromide to correct it.

The infant should be kept in the cool air as much as possible. It must be kept upon a pillow, and not in the nurse's arms, and all superfluous clothing should be removed.

The diaper should be removed and disinfected as soon as soiled, and the infant should be bathed.

Stimulation and external warmth are the indications for the stage of collapse. Whiskey or brandy and camphor in large doses are imperative. To excite cutaneous warmth, hot bottles, warm blankets, and mustard foot-baths are applied.

The exercise of good judgment is necessary to the success of the stage of reaction. The infant must be given small quantities of milk and lime-water at short intervals. Pellets of cracked ice or cool water must be given occasionally to allay thirst; the stimulant must be gradually decreased; sleep should be secured by the camphorated tincture, if necessary; it must be given the benefits of pure, fresh air; and discretion in clothing must be exercised.

1525 I STREET.

PROCEEDINGS OF THE SECTION ON PEDIATRICS OF THE THIRTY-EIGHTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION.

Held in Chicago, June 7-10, 1887.

REPORTED BY CHARLES WARRINGTON EARLE, M.D.

THE section on diseases of children met in Club Room 4, Grand Pacific Hotel, at three o'clock, June 7, 1887, and was called to order by the chairman, Dr. J. S. Knox. The list of papers to be read was presented, but the attendance being very small, the meeting adjourned to meet the following day. Previous to adjournment, however, the subject of appointing a committee to consider the advisability of asking the general meeting to take this section back to that of obstetrics and diseases of women was considered. The statement was made that this section had been in operation for nearly, if not quite, five years, but that up to this time very little interest had been taken, and, inasmuch as the subjects presented were of great interest to those who attend the above section, it was believed to be an open question as to whether the two sections should not be merged together. After considerable discussion the motion was lost. The section met the two following days of the Association with a very good attendance, and eight papers were presented. An abstract of these papers will be considered somewhat in the order of topics considered rather than in the order presented.

Dr. Bulkley, of New York, read a paper on "Infantile Feeding, especially with Reference to Subjects with Infantile Eczema." After dwelling at considerable length on the importance of infantile feeding and the carelessness with which the instructions of physicians are carried out by mothers and nurses, he spoke in regard to the better feeding of the mother when nursing her child and the influence of her diet upon eczematous diseases.

In regard to the mother, the doctor said that he almost always gave a bitter tonic with acetate of potassium, and paid particular attention to the condition of her bowels. He also gives iron, hypophosphates, malt, and cod-liver oil. He was opposed to giving tea, beer, chocolate, and many other supposed nutritious drinks to the mother when she is nursing a child with eczema. If properly taken, *milk* affords the best means from which the human milk can be secreted, and there are few who cannot take it, both with benefit to themselves and their nursing infants, if due care is exercised in its administration.

Milk should never be taken by the mother at her meals, nor in connection with any other substance whatever. It should usually be taken at about the temperature of the body, *never iced,* and when the stomach is entirely empty, presumably three hours after a light meal, and four hours after a hearty one. His conclusions were as follows:

1. The necessity of carefully watching the diet of infants with eczema, and giving special instructions that harmful articles may be avoided.

2. Specific instructions in regard to food and its preparation for these causes.

3. The more free use of milk both for nursing mothers and for infants deprived of breast milk.

4. The taking of milk by adults apart from all other food, in the interval before meals, when an alkaline state of the stomach facilitates its immediate adoption.

5. The more free employment of wheat products in the nourishment of older children with infantile eczema.

Dr. Shoemaker also read a paper on the "Cause and Treatment of Infantile Eczema." He said that this disease was practically due to one of four causes:

First. Insufficient or improper food.

Second. Imperfect assimilation.

Third. Deficient excretion.

Fourth. External irritation.

If the mother's milk is scanty in quantity, or poor in quality, or altered in character by pregnancy or disease, the nutrition of the child will suffer.

The food may be perfect in all respects, but, owing to disturbances of the digestive tract, a considerable portion of it is rejected by vomiting or hurried out through the intestinal canal before digestion or assimilation are complete.

Deficient excretion is not as frequently chargeable with the development of infantile eczema as it is with many other cutaneous disorders, but many stubborn cases promptly disappear when the normal functions of the various excretory organs are re-established.

External irritation is a frequent cause of numerous infantile troubles, such as woollen or flannel clothing, too light or dyed clothing, wet napkins, scratching and too frequent washing of the body. An eruption is frequently increased by the use of patent quack preparations.

The doctor dwelt largely upon the treatment, which consists in the selection of proper food and with tonics for the mother and a dietary for the child which can be properly assimilated.

Dr. Getz, of Iowa, read a paper on "Diphtheria." The author stated that while this was a subject which had often been discussed by those having experience with the disease, many others had attempted to discuss it who had only had experience with "ulcerated tonsillitis," or what could be called "homœopathic diphtheria."

Admitting the disease to be of the zymotic class, highly infectious, slightly contagious, the chief early symptoms of which are malaise of a few hours' duration, with or without chills, followed by a slight fever. There is seldom vomiting or convulsions at this stage, and the local symptoms are so slightly painful or inconvenient as to cause the inexperienced to overlook the real trouble.

Physicians are often called to determine the reason for not feeling well as late as twenty-four hours after the membrane formation has set in, which he believes is always found to exist as early as any noticeable fever. The severity of the attack cannot be usually discovered by the constitutional symptoms found to exist during the first thirty-six hours, but is determined alone by the soil in which it develops, the blood and other elements in some systems affording barren soil which renders them proof against constitutional contamination, while in others it is fertile and becomes rapidly saturated unless active measures are taken to destroy the germs of disease.

Consequently two classes of remedies are required,—germicides and fortifiers. The former may be applied locally and termed direct or indirect; the indirect so altering the character of the blood that the germs perish on reaching it.

Fortifiers are: First. Such remedies as place the tissues in such condition as to prevent the lodgment of the disease.

Second. The second class of germicides are used.

Third. Remedies, surroundings, and elements which tend to strengthen the blood and system, rendering it a nearly barren soil for the disease.

As the disease is a rapid one, terminating usually in four or six days, the treatment must be prompt and thorough.

There can be little doubt concerning the seat of disease, and if not constitutional at the outset, it becomes so, and the treatment resolves itself into local and constitutional.

If treatment is commenced within twelve hours from the commencement of the formation, there should be no fatal results; if twenty hours, you must expect to lose a patient occasionally; but if twenty-four hours have elapsed, you must expect many fatal results.

The malignity of the disease depends more on the quantity than the quality of the germs, and in prevention of their development lies the secret of success in treatment.

Owing to the mildness of the early symptoms it becomes the duty of the physician to examine carefully when a patient has been exposed to diphtheria, or if there is any slight trouble in the throat, whether the patient has been exposed or not. In difficulties resulting from cold, the local symptoms in the way of pain will call the attention to the organ.

There is much diversity of opinion as to whether membranous croup and croupal diphtheria are not the same disease, but, properly, there is no such disease as diphtheritic croup (as croupal diphtheria is sometimes called), but it is diphtheria of a croup type involving an inflammatory condition and exudation of the larynx. The author gave a table showing that during a diphtheria epidemic in his city in 1886 there were forty-one deaths (twenty male and twenty-one female) out of something over one hundred cases reported, about one-third of the number being school-children. The epidemic abated without any apparent changes in hygienic surrounding, water, etc., but the author thinks a factor for development of the disease exists in filth, and that, connected with certain atmospheric influences and tangible impurities, develops the disease.

The question what remedies are best adapted in the way of drugs was answered,—quinine and tinc. chlor. of iron. They are not new, but have not until recently been given the merit they deserve. In diphtheria the patient should, if an adult, have for first dose of quinine fifteen or twenty grains, subsequently ten grains every six hours during the first thirty-six or forty-eight hours; after that enough to continue a slight ringing in the ears, care being taken to not overdose.

Tincture of iron may be used as a direct germicide and constitutionally as a fortifier by preserving the purity of the blood. It can be used as a local application, varying in strength from one part of iron to three of glycerin and so on to full strength as the case requires. Applications should be made by the physician personally, when possible, twice or three times in twenty-four hours. Twenty drops of the muriated tincture should be given an adult in a teaspoonful of water every two hours as long as the stomach will stand it; if stomach becomes irritable, lengthen the intervals. Hot applications are thought injurious, causing more rapid development of germs. Stimulants may be given when necessary. Ice may be used in the mouth. The main feature in the treatment should be ever remembered by the physician, that to insure success medicines, stimulants, and food must be given on the hour and all local applications made by the physician himself.

Dr. Sparry, of Wisconsin, read a paper on "Entero-colitis." He believes that the cause of this disease is in many cases small things which were regarded by many physicians as insignificant and beneath their notice. He thought it was doubtless improper food, plus certain other causes over which we have no great control unless we can have the hearty co-operation of both mother and nurse. He spoke of the popular idea that because a baby had always been well it should be taken to the table with the rest of the family and should have what it most desired to eat. To use an expression of the mother, "Baby eats just what the rest of us do." He brought out fully the advice which is so often and gratuitously given by neighbors and relatives who think that because baby is a man on a small scale he needs just exactly the same food of a man, only on a small scale. To bring up a baby on artificial food requires great skill and patience. We must have the full confidence of the nurse and mother, and the instructions to both must be gone over and over, line upon line, precept upon precept; over and again must these same instructions be given. He believes that the food for infants should be but one thing, and that is mother's milk, but when this disagrees with a child, then comes a substitute made of barley-water, cow's milk, and sugar of milk. The different animal broths and toast-coffee are frequently well digested. His instructions in regard to the preparation of infant food are as follows:

"Only enough shall be prepared for each feeding. Observe the reaction of the milk with litmus-paper. If acid, it is to be corrected with bicarbonate of soda or lime-water.

"The barley-water is prepared by adding a pint of boiling water to two tablespoonfuls of granulated pearl barley, and after boiling for five minutes remove and strain. Now, the first you know the nurse will be adding more barley, or will do what I have had them do, not strain it, and then boil too long. I have also had them add one half-cup of pearl barley instead of a tablespoonful or two, under the idea that it would make them grow. It may be prepared as directed in Meigs's mixture, the milk-sugar being added to the barley-water. Then when it is to be used, all you have to do is to heat the prepared barley-water and add it to the milk. The milk should not be boiled, as it has been shown that there is an undescribable, unmeasurable something lost, unless you wish medicinal effects from it. Milk-sugar should be used always, and the reason given the nurse for so doing."

He spoke of the usual remedies which have been relied upon, and in addition the use of chloral hydrate. This, given in a stage of collapse, acts with remarkable results. He cites the following:

"One night I was called out in the country to see a baby who was very sick with summer complaint, and the messenger told me he did not think I would find the child alive. When I got there I found the child (seven months old) lying half conscious, rolling its head from side to side, which they told me it had done for twenty-four hours. Eyes half open, head hot, pulse weak, rapid and irregular, extremities cold. It would drink a half-dipper of water at a time, and it would go literally through it. The child had been sick two or three weeks and with the usual history. I saw something must be done immediately. I gave the child five grains of chloral, which it kept down. It was asleep in five minutes, and I had them put it in its cradle with bottles of hot water to its extremities and cold to its head. I also had them make some beef-tea immediately and toast-coffee; the beef-tea to be given every three hours a teaspoonful, and the toast-coffee whenever it wanted a drink. Brandy was added to the toast-coffee. The child was made to sleep for twenty-four hours with chloral, and the irritability of the digestive tract was overcome by bismuth and calomel, and quinine as a tonic. In two days it was decidedly better, and then the milk was gradually given as per strict injunctions how to prepare it. The child made a good and rapid recovery. After this I had another case like it and found it entirely successful. The object in giving full doses of chloral is to get the brain entirely insensible to reflex action. These large doses may seem risky, but small doses do not do. Even in pseudo-hydrocephalus I do not think chloral is contraindicated, as it relaxes the arterioles, inviting the blood to the surface."

Dr. Stewart, of Philadelphia, read a paper on "Phimosis," and described his operation by gradual dilation for its relief.

He said that male children were more irritable than female, because in many cases there was some congenital defect in this part of their bodies. Parents and physicians were very apt to neglect children with this difficulty, and in too many cases proper examinations were not made either by parents or family physicians, and the case dismissed with the remark that the bladder or kidneys were probably a little affected, and the child allowed to go along with this congenital affection threatening his health and paving the way for invalidism. He made the statement that with some cases it undoubtedly caused self-abuse, and many other complaints which were believed to be from teething or worms were caused by some form of constriction of the glans penis. It was claimed that some forms of paralysis were produced by it and cases of convulsions.

The ordinary operation to relieve this difficulty is dreaded by many parents on account of its being so bloody, and the doctor had been led to select what he terms a bloodless operation, which is performed by a careful stretching of the mucous membrane. He described his instruments and methods by performing the operation before the section.

The secretary, Dr. Lawrence, of Arkansas, read a paper on "Malarial Fever" in infants and young children. He spoke of malaria as it is found in his vicinity, which is certainly different from the malarial diseases met with in the West, more particularly in the northern part of Illinois. He spoke of the cold stage, the same as seen in the adult, followed by the other phenomena of this disease. He uses quinine in large doses, and prefers liquorice as a menstruum to disguise the taste.

He spoke of remittent fever as occurring less frequently than intermittent fever, which is decidedly different from the way it appears in Chicago.

Dr. Heminway, of Michigan, devoted considerable time in reading a paper on "Gastro-Intestinal Hemorrhage." It seemed difficult for him to understand why a case of hæmophilia could take place in children with no hereditary tendency.

Dr. Waxham, of Chicago, presented a paper on "Intubation of the Larynx," drawing his conclusions from one hundred and thirty-four operations.

The ages of these patients were as follows:

5	cases	with	1	recovery,	or	20	per cent.,	under	1	year.	
14	"	"	2	"	"	14+	"	between 1 and	2	years.	
29	"	"	7	"	"	24+	"		2	"	
23	"	"	4	"	"	21	"		3	"	
21	"	"	7	"	"	33	"		4	"	
15	"	"	7	"	"	46	"		5	"	
3	"	"	1	"	"	33	"		6	"	
9	"	"	2	"	"	22	"		7	"	
4	"	"	2	"	"	50	"		8	"	
1	"	"	1	"	"	100	"		9	"	
2	"	"	0	"	"	0	"		11	"	
1	"	"	0	"	"	0	"		14	"	
7	"	"	0	"	"	0	"				
134			34			26.11	"		3	"	8 mos.

There were seventy-one cases three years old or under with fifteen recoveries, or twenty-one per cent., while there were sixty-three cases over three years with twenty recoveries, or thirty-one per cent. The youngest patient to recover was an infant of nine months; the oldest a child of nine years. In every case without exception false membrane was observed. The longest period that the tube was worn was two weeks, the child being but two years old and making a perfect recovery. The shortest period that the tube was worn was one hour. The child was a boy three years old, and was under the care of Dr. J. G. Berry. The patient was in a semi-comatose condition and almost pulseless. All who saw the child were firm in the belief that he could live but a very short time. The tube was introduced, and the child was soon resuscitated, considerable membrane being rejected. In an hour we were again called in great haste, as the child had coughed up the tube together with a small piece of membrane. As the respiration was perfectly easy the tube was not reintroduced. The membrane did not re-form, and the child made a rapid recovery. Taking the above case as a standard, the result would seem satisfactory.

In the whole history of tracheotomy where can we find a record of seventy-one cases of three years or under with recoveries amounting to twenty-one per cent.? Indeed, tracheotomy is so rarely successful at this age that many consider it a contraindication to the operation. After the age of three years we have a record of sixty-three cases with twenty recoveries, or thirty-one per cent., a record certainly comparing favorably with tracheotomy.

Many in criticising intubation speak slightingly of the operation, and insinuate that the operation is *always performed early* and often performed unnecessarily. Such is not the case. In my own experience the operation has always been delayed, and accepted only as a last resource. It has not been performed until there has been absolutely no hope without surgical interference.

Many with limited experience report a much higher percentage of recoveries than has been given above. Some report as high as thirty, forty, and even fifty per cent. of recoveries. In my own experience seventeen successive operations were followed by eight recoveries, or forty-seven per cent. In another series of cases, thirteen successive operations were followed by six recoveries, or forty-six per cent. Taking a large number of cases, however, of all ages, conditions, and grades of severity, and we can hardly hope to save more than about twenty-five per cent. This, however, is a larger proportion than can be saved by the great majority of physicians with tracheotomy.

In the discussion, Dr. C. W. Earle, of Chicago, said, "At the commencement of my remarks I want to compliment Dr. Waxham for the introduction or revival of this operation in our city, and the skill with which he performs it. I think the profession, especially those more particularly engaged in the practice of diseases of children, are under great obligations to him in pushing this matter forward. The tabulated statement of cases which the doctor has presented to us this afternoon is very favorable indeed, although I think he is mistaken in believing that tracheotomy in the hands of skilful operators has not presented as good results. I am in favor of the operation when I can get Dr. Waxham to perform it for me. The trouble is that everybody thinks they can do it. It is like abdominal surgery; everybody believes they should be permitted to dabble in it, and many who have had no special study, practice, or fitness rush in to tube the larynx. A large number of parents will permit the operation of intubation who would not allow tracheotomy, and in my judgment many lives will be saved for this one reason. There are a certain number of throats to be opened, for we shall always have cases of laryngeal stenosis, and tracheotomy or tubage must be done. What we should insist upon is that those only specially fitted should be allowed to do this operation.

"Dr. Waxham has undoubtedly saved more cases by intubation than any surgeon in the city has by tracheotomy, but if we could know all the unsuccessful cases which have taken place, the percentage would be small enough, and might not compare favorably with tracheotomy.

"Some operators in this city have tubed the larynx many times and have lost every case, and they are now crying a halt for the operation. It is time for them to stop, or to do as I do, send for Dr. Waxham. I have tried to do the operation with the doctor by my side; it was impossible for me to enter the larynx, but as soon as I relinquished the instruments to my colleague the child was relieved at once. I made this open confession before the Chicago Medical Society some weeks ago, and a quiet smile passed around the hall. If others had made this same confession and stopped operating (and among them some who, perhaps, smiled) it would have been better for the babies. I regard the operation as a justifiable one, and one which will save many, but I shall insist, as far as I am personally concerned, that none except those who are expert, those who have a great deal of experience, and who thoroughly understand the technique of the operation, shall perform it. I desire to raise my voice against every person getting a set of these instruments which the doctor has exhibited, and every time he sees a child suffering with slight stenosis of the larynx attempting to do this operation. I know a great many children are killed through lack of skill on the part of the operators. The only criticism that I desire to make, and I have made it before, is that Dr. Waxham represents that the operation can be done with *perfect ease by anybody*. I think that in this he is in error. He performs it easily, but everybody cannot."

Dr. Geo. Wheeler Jones, of Danville, Illinois, presented one of the most valuable papers read before the section, on the "Pathology of Diarrhœal Diseases of Children." His pathology was well up to all of the recent investigations, and if each member of the profession could read the article it would have a tendency to stop, in some degree, the terrible mortality which comes to these little people during the summer months. He treats them with antiseptic remedies, and discards, in a great measure, the use of astringents and opiates, with which these little people have been dosed during the past generations.

The doctor gave a rapid review of the facts and theories connected with the subject of micro-organisms in their relation to intestinal disorders, and also reverted to such facts as are known in connection with the development of ptomaines and leucomaines, especially the former, and unhesitatingly accepted the view that both micro-organic life and the cadaveric alkaloids were responsible for a large proportion of the intestinal disorders of children. He paid a deserved compliment to Prof. N. S. Davis, through whose influence his own mind had been set to work in this channel of thought years ago. The discovery of the ptomaines had opened a wide field for investigation, and, taken in connection with our knowledge of micro-organic life, would satisfy the most exacting demands for a substantial base upon which to revise and rebuild our pathology of a host of these ailments, heretofore difficult to understand and unsatisfactory to treat.

For a number of years his treatment of these disorders has been based upon a belief in their origin in aseptic conditions, amid the environments of microscopic life, and his treatment has been very successful. A prompt clearing of the alimentary canal by the most suitable purgative convenient, followed by a combination of two or more of the many valuable antiseptics, sedatives, and antacids now known to every intelligent physician, would speedily cure the worst cases. The doctor referred to purging as nature's course, and to bile as nature's antiseptic. His own course was to make such combinations as were most convenient and most palatable. He especially mentioned a solution of chloride of sodium as fulfilling several indications in the commencement of the disorder and given in varying degrees of temperature. A weak solution of corrosive chloride (one to four thousand), or minute doses of the mild chloride (one-twentieth to one-fiftieth grain) in association with anisic acid or other antiseptic carminatives, had always proven valuable, especially in those cases partaking largely of the type known as "offensive diarrhœas." The turpentines were great favorites with him, and he had some faith also in the camphors. Listerine, a well-known combination of several of the best vegetable antiseptics, he deemed worthy of especial mention as having proven of the greatest service in his practice. As a sedative he advised chloral or chloroform, or the bromides, in preference to opium, although the latter could sometimes prove of infinite value. He gives all his remedies, whatever he may choose, in very small doses, frequently repeated, and he carefully avoids all forms of nourishment that can possibly add to the disease by its liability to rapid fermentation or difficulty of digestion,—*e. g.*, in the diarrhœa from the ptomaine of milk, milk as a nourishment must be avoided for several days, as the alkaloid seems to develop rapidly fresh specimens. Several new remedies that were being recommended he had found very unsatisfactory. In our old armamentarium we had everything we could ask for, and under these new pathological views the remedies could be applied with a precision and a satisfaction heretofore unknown. The tendency towards putrescence must be thwarted, putrescence itself suppressed, and its consequences averted.

In conclusion, the work in the section was fairly successful. A few papers were presented which, to those who have gone over the subjects of pediatrics, presented nothing new, but to the average practitioner these will probably be of value. It does seem that not only in this section, but in others, it would be well if the papers could pass under the observation of those who are the best fitted to judge of their value and decide whether or not the time of the section should be given up to them.

The meeting, as a whole, was successful both in regard to numbers and valuable papers. We missed, however, the presence of some of the old war-horses from the East, whom we have delighted to meet and whose papers are always instructive.

While we acknowledge the supremacy of many of the Eastern authorities and teachers, we must insist that there is some good west of a line drawn fifteen or twenty miles this side the large Eastern cities, and we trust that the time is not far distant when we will have their hearty co-operation in these meetings.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Jamieson and Edington: The Prophylaxis of the Spread of Scarlet Fever, with Investigations as to the Nature of the Specific Contagium. (*Brit. Med. Jour.*, June 11, 1887.)

It is three years since Dr. Jamieson published his views as to the best means of preventing the spread of scarlet fever. His method was the free use of disinfectants in the throat in the early part of the disease, and the use of baths and antiseptic ointments during the desquamation. (*Vide* ARCHIVES OF PEDIATRICS, vol. i. 272.) A number of illustrative examples showing the practical value of this method are given in the paper. His idea is that the late desquamation contained the contagium in largest amount, and that this argued for the fact that air was necessary.

The bacteriological part of the investigation was carried on by Dr. Edington, and was made upon the blood and the skin of scarlatinal patients. Microscopic examination of the skin during desquamation showed many minute stained points smaller than micrococci, but not of the nature of bacteria. Cultivations were accordingly made from the skin and the blood. Careful precautions being taken to exclude extraneous organisms, a number of bacilli and micrococci still were found. The two most important he designated by the provisional names of *diplococcus scarlatinæ sanguinæ* and the *bacillus scarlatinæ*. The former occurred in forty-five per cent. of the tubes taken from the desquamation, and in thirty per cent. of the tubes taken from the blood; the latter occurred in every one of the tubes but one (and that was accidentally broken before proper time had elapsed) taken from the desquamation if taken *after the twenty-first day* from the beginning of the fever, but never before this; and also in every tube from the scarlatinal blood if *taken before the third day* of the fever. Inoculations were practised with both bacillæ. The first gave negative results. The latter produced erythema in rabbits and guinea-pigs, followed by desquamation, and in young calves a febrile condition accompanied by a red dry rash, followed by desquamation. The blood taken from a case of scarlet fever on the third day caused erythema, followed by desquamation, in a guinea-pig.

The bacillus apparently disappears from the blood of patients with scarlatina after the third day, and then other organisms, chiefly micrococci, appear.

Experiments were made with the desquamation scales of seven patients treated by Dr. Jamieson's plan of baths and inunction, and in only two cases was the bacillus present. In these it required six days for the development of the bacillary pellicle, while usually a profuse pellicle was developed in from twenty-four to thirty-six hours. These results from a long series of carefully-conducted experiments are certainly entitled to consideration, although the results obtained do not accord with those obtained by Dr. Klein in his investigations recently published on the Hendon cow-disease and its relation to human scarlatina.

The disease in the cow was ushered in by a short initiatory fever, dry hacking cough, quick breathing, in many cases sore throat, discharges from the eyes and nostrils, and an eruption on the skin, around the eyes, on the hind quarters, and on the teats and udder in the form of vesicles or bullæ. The experiments made with a diplococcus obtained from these ulcers led him to conclude that these organisms were the cause of human scarlatina. He found the same micrococcus in the blood and tissues of cases of human scarlatina. The cultivations of the organism produced a similar disease in calves.

One point adverse to Klein's view and in favor of that of Edington is, that the former produced a moist eruption in no way resembling scarlet fever, while the latter observer produced a dry eruption followed by desquamation by the injection of scarlatinal blood into guinea-pigs and of his bacillus in a calf.

In the present differences of opinion among bacteriologists, the profession will have to suspend judgment until further investigations are made.

Von Herff: Laryngoscopical Observations in Whooping-Cough. (*Jahrb. f. K.* [abstracted], xxvi. 1.)

The author had the opportunity of making investigations concerning the changes in the larynx and trachea in all the stages of whooping-cough, by means of laryngoscopical examinations upon himself. Several investigations with the laryngoscope were made, previous to the author's, by Meyer-Hüni and others, upon this disease, and Meyer-Hüni concluded that its foundation consists in a superficial inflammation which extends over the entire respiratory mucous membrane as far as the middle-sized bronchial tubes; and that it is especially noticeable in the inter-arytenoid region, though the vocal cords themselves may remain unaffected. The reflex cough in such cases was believed to be due to the influence of a small collection of mucus in the inter-arytenoid region. Inclination to vomit and choking movements were found to be caused directly by disease of the pharyngeal mucous membrane. Contrary to Meyer-Hüni's conclusions, Rossbach found that the pharynx, larynx, and trachea are intact in whooping-cough if there is no complication, but that the bronchi are always diseased, and that the paroxysms are due to excitation, of moderate intensity, of the cough centre in the spinal cord. The author found in his investigations upon himself that in the catarrhal stage of the disease there were only traces of catarrh in the pharynx, larynx, and trachea; that in the convulsive stage the lower surface of the epiglottis, the mucous membrane of the arytenoid cartilages, and of the cartilages of Santorini and Wrisberg showed decided evidences of congestion; in the declining stage the congestion was sometimes present and at others absent.

During the paroxysm itself the entire mucous membrane of the air-passages was lustrous, covered with transparent mucus, and dark red in color, and upon the posterior wall of the larynx a yellowish pellet of mucus, as large as a pea, was always visible, this being evidently the exciting cause of the paroxysm. A characteristic paroxysm could always be excited by touching with a sound the laryngeal wall in the deeper portion of the arytenoid region, and less readily by touching the inferior surface of the epiglottis. The same effect could be produced by touching the posterior wall of the larynx with the finger, or by quickly throwing the head back. The author's conclusions agreed with those of Meyer-Hüni, but these experiments have been too few in number to warrant the conclusion that their results signify unvarying laws.

A. F. C.

Babes: Spores of the Bacilli of Diphtheria. New Method of Staining Normal and Pathological Tissues. (*Jahrb. f. K.* [from *Progrès Méd.*,) 1886, No. 8, p. 154], xxvi. 1.

The author, in this paper, details his investigations concerning the Klebs-Löffler bacillus of diphtheria, which he has found in six cases of laryngeal diphtheria, eight of laryngeal croup, three of diphtheria following measles, and one each of scarlatinal diphtheria and diphtheria of the conjunctiva. In all these cases it was associated with streptococci, with very fine rods, or with a staphylococcus, which stains cultures yellow. The bacillus was found in the pseudo-membranes, the deep tissue of the tonsil, or in the neighboring glands. The bronchial glands usually yielded a pure culture of the streptococcus, or an encapsulated micro-organism, described by Fränkel, Passet, and the author, in connection with pneumonia and in pus; the latter was found either isolated or in combination with the streptococcus. The study of the cultures showed that the terminal thickened parts were well defined at any given moment, and surrounded with an envelope, while the central part became quite distinct, and after about eight days large movable spores could be found of the same length as tubercle-bacilli, but double their thickness. The spores often lie quite free, and then form rows in which the borders of the spores are in contact, while often small rods are seen lying like small handles at the end of the large spores. In addition to these spores, other remarkable forms in process of evolution may occur. These germs, the infective power of which is uninfluenced by heat, are considered by the author as the spores of the Klebs-Löffler bacilli. A. F. C.

Schoppe: Gastro-Enteritis in Infants and its Treatment. (*Central. f. Kinderh.*, April 16, 1887.)

The author bases the etiology of this condition upon the modern germ theory, regarding as the immediate cause the irritation which the fermenting contents of the intestine produce upon the ends of the intestinal nerves. On the other hand the further assumption that the peristaltic action, which is intensified by this irritation, gives rise to diarrhœa and vomiting, and to thickening of the blood on account of the loss of fluids which accompanies these conditions, does not harmonize with his clinical observations, in which the loss of fluids has not infrequently been inconsiderable, and the phenomena of collapse and depression of temperature at the surface out of proportion to the intensity of the intestinal phenomena. The editor thinks, however, that the theory which this author seeks to introduce explains the clinical phenomena and the anatomical condition even less satisfactorily than the one which he seeks to displace. Besides, both American and German writers have preceded him in explaining the phenomena of collapse which occur in cholera infantum by a reflex vaso-motor paralysis, operating especially in the region of the splanchnics. This explanation is at least as good as that of the author's, which is summarized in the term *shock.* The resemblance of true *shock* to the clinical picture which obtains in the asphyctic stage of cholera is not a sufficient reason for amalgamating two such heterogeneous conditions. In spite of the well-known experiments of Goltz we are still without exact knowledge of the meaning of *shock.* The author's theory is, however, that the fermentation processes in the intestinal canal exert an intense irritation upon the intestinal mucous membrane, which is transmitted to the spinal cord, and thence excites profound paralysis of the splanchnics, or shock. The subsequent vaso-paralytic congestion of the intestinal vessels renders plausible, from a physiological standpoint, the group of symptoms observed in the course of cholera infantum. Local dilatation of the intestinal vascular system must cause a diminution in the volume of blood in the other vascular areas, collapse and depression of temperature at the surface must be the result. At the same time increased nutrition in the intestines—that is, an increased blood-supply—will also bring increased functional activity, that is, vomiting and diarrhœa. In accordance with this theory the author would seek to divert the blood which tends to accumulate in the intestinal vessels to the skin by enveloping the body in wet wrappings, after the Priessnitz plan, as soon as the disease is recognized, and carefully and persistently continuing this treatment. Mustard-baths should also be used. In comparison with this the symptomatic treatment of the vomiting and diarrhœa has not seemed important, but of the means for such treatment opium is considered the most serviceable. For a heart tonic Russian tea, with wine or brandy, is advised. Whether intentionally or not, the author has said nothing in regard to the value of disinfectants as antagonists to the fermenting processes, neither are his ideas illustrated by clinical reports. A. F. C.

Brochin: Treatment of Dyspepsia in New-Born Infants. (*Jour. de Méd.*, June 5, 1887.)

If the breast-milk is too rich, let the intervals between nursing be longer; if it is too weak, a more nourishing diet must be provided for the mother or wet-nurse. If the baby is bottle-fed, nothing but milk should be given until after it is six or seven months old, and weaning should not be complete until after the fifteenth, sixteenth, or eighteenth month. Digestive troubles may be treated with small doses of Vichy or other suitable alkaline waters, two coffeespoonfuls being given at each nursing to children under one year of age, a dessertspoonful to older children. Gastric indigestion may be treated with syrup of ipecac, vomiting with small quantities of lime-water, colic with soothing enemata or enemata of oil, constipation with a mixture of castor oil and oil of sweet almonds,—a coffeespoonful at a time. Sharp pains in the stomach call for the use of flying blisters to the epigastrium.

A. F. C.

Péronne: Treatment of Cholera. (*Jour. de Méd. de Paris*, May 22, 1887.)

The treatment of cholera by opium or morphine is believed to be the rational one, on the ground that it antagonizes the pathological condition which is present in cholera. From a comparative study of the four principal methods of treatment used in England, it was found that the method of calomel and opium was superior to that of evacuants and stimulants, and that the method of opium with lime was better yet. In sporadic cholera no drug exerts a curative effect to such a degree as opium, and if it fails to have effect in the algid state, it is due to the fact that the mucous membrane has almost no absorptive power during that period, and hence either intravenous or multiple subcutaneous injections should be used. Used in this manner during an epidemic of cholera at Constantinople in 1872, about half the cases recovered, which was a very much larger proportion than under the other methods of treatment. The injections should be commenced at the beginning of the disease, and should be continued until the poison has exhausted its force. A. F. C.

Selenski: Concerning the Method of Systematic Weighing as a Means of Determining the Physical Condition of the Organism. (*Centr. f. Kinderh.*, April 16, 1887.)

The author's paper was read before the section in pediatrics at the second congress of Russian physicians at Moscow. He asserted that increase in body-weight depends upon good nutrition and development of the tissues or upon an accumulation of fat or fluids in them. The tissues may even be diminished in volume, and yet the weight be increased on account of a preponderating increase in fat or fluids. A table of body-weights will, therefore, be of service for clinical purposes only, as it indicates an increase or diminution of the elements which are necessary to life, irrespective of the increase or diminution of fat. The determination of the body-weight and specific gravity will enable us to form an accurate opinion of the state of nutrition of the organism, because all the tissues, with the exception of fat, are heavier than water. From a series of investigations upon animals the following propositions have been formulated:

(1) Weighing of the body as ordinarily practised admits of no reliable conclusion in regard to the state of nutrition and health of the organism, and should, therefore, be discontinued.

(2) Only by obtaining the specific gravity of the body can a correct conclusion be drawn with reference to the relation of the different organs and tissues to the fat which they contain.

The foregoing conclusions are modified by the editor in the statement that systematically taken weights of breast-nourished infants are of decided value, and can induce valuable conclusions. In those cases in which great accuracy of calculation is requisite, the determination of the volume of nitrogen in the urine is of value in forming a conclusion as to the condition of the system with reference to the volume of nitrogenous matter introduced and eliminated. A. F. C.

Guelpa: Treatment of Diphtheria. (*Jour. de Méd. de Paris*, May 29, 1887.)

The author's paper is based upon an epidemic in Algeria, in which more than two hundred cases of diphtheria were treated by him. His treatment consisted in the application of a one-per-cent. solution of perchloride of iron to the nose and mouth with a spraying apparatus almost every fifteen minutes. The mortality by this means of treatment was less than fifteen per cent. His conclusions are,—

1. In the treatment of diphtheria the use of caustic applications is never beneficial, and may be harmful.
2. The use of a solution of perchloride of iron, of the strength of five to ten parts per thousand, has given the best results in a large series of cases and in different epidemics.
3. These injections are also the best means for obviating the contagiousness of the disease.
4. They also prevent the extension of the disease to neighboring parts in almost all cases.
5. This treatment can be readily carried out without great annoyance to the patient, the physician, or the attendants.
6. Should the case require it, this treatment may be supplemented by the methods of Delthil, Geffrier, and others.
7. It is the least expensive of all methods.
8. It does not require the assistance of a trained nurse, but can be learned and practised by any one.
9. It is not attended with danger in case it should be unskilfully used.

10. It is a good means of treatment for catarrhal angina; also for the herpetic and ulcerative forms, and consequently is doubly serviceable in those cases in which the diagnosis is doubtful.
A. F. C.

Rothe: Treatment of Diphtheria and Scarlatina by the Internal Use of Mercurial Preparations. (*Jour. de Méd.*, June 5, 1887.)

While the efficiency of mercurial preparations cannot be doubted, their use is based entirely upon empiricism, and it must continue to rest upon clinical observation alone until experimentation has given us more definite and exact information. The author affirms that the treatment of diphtheria by the bichloride and the cyanide of mercury is as effective as anything that has as yet been discovered. A combination which he has also found very useful is the following:

℞ Hydrarg. biniod., 0.015 gramme;
Potass. iod., 0.200 gramme;
Tinct. aconiti, 1 gramme;
Aquæ destil., 60 grammes.
Sig.—A coffeespoonful every hour for a child under three years of age.

For children from three to twelve years of age the quantity of biniodide in the above formula may be increased to two centigrammes, and for adults to three centigrammes, the quantity of water being also increased to one hundred and twenty grammes. On the third or fourth day, when the fever decreases and the local symptoms become less intense, the medicine should be given at intervals of two hours. In severe cases the dose should be given every hour for a week, but only during the hours when the child is awake.
A. F. C.

Cuomo: The Ophthalmoscope as a Help in the Diagnosis of Brain-Diseases in Children. (*Jahrb. f. K.* [abstracted], xxvi. 1.)

The author complains of the failure of systematic writers upon the diseases of children to advocate ophthalmoscopy in their text-books, and adduces facts to prove its value. In his experience its application is always possible. If the children to be examined are comatose, the pupils will be widely dilated and fixed, and one needs only a single assistant to fix the head in the desired position. If the children are conscious, the effect of an intense light (reflected ?) will be to arrest their attention and fix it long enough with dilated pupils to enable one to make the necessary inspection. In tuberculous meningitis, in addition to tubercles in the choroid, which are not constant, one always finds evidences of neuro-retinitis, cloudy papillæ, contracted arteries, and concealment of the entire fundus. In simple meningitis one finds hyperæmia with redness of the retina and choroid just as in *hyperæmia cerebri.* In chronic hydrocephalus the evidences of limited space in the cranial cavity will be manifest in distinction from rachitic hypertrophy, in which the symptoms are negative. In anæmia of the brain the entire fundus is pale and the vessels small. An early diagnosis is often possible by the aid of the ophthalmoscope, where otherwise it is not. A. F. C.

Gessner Stolpmünde: How shall the spreading of Infectious Diseases in the Country be prevented? (*Arch. f. K.* [abstracted], viii. 4.)

The many unfortunate experiences of country practitioners in connection with the extension of epidemic diseases have suggested to the author the following propositions for the prevention of such extension:

(1) Physicians, teachers, pastors, and midwives should be compelled, under suitable penalty, to bring to the notice of the proper authority any case of infectious disease which may come under their observation.

(2) The proper public officer having been informed of such a case, communication with the infected house should be forbidden under penalty.

(3) A teacher should refuse to receive in his school children from an infected house until a physician's certificate testifies that danger from infection is past.

(4) Midwives should not be allowed to enter infected houses.

(5) Infected public houses must be closed until the proper authority certifies that they are no longer a source of danger.

(6) The head of the family in every infected house must be notified that careful disinfection must be carried out.

(7) Should an epidemic continue to extend, the condition of affairs must be accurately defined at certain intervals by the proper authorities.

(8) The schools should be closed until the epidemic is over, and no child should be allowed to return without the physician's certificate as to the propriety of so doing.

(9) If the school is infected, the entire building should be disinfected under the direction of competent authorities.

A. F. C.

Monti: The Regulation of the Condition of Wet-Nurses by the Public Board of Health. (*Arch. f. Kinderh.*, Bd. viii. H. 4.)

After discussing the needs of such regulation and the prevalent customs in Paris, Berlin, and Vienna, also the varying conditions which obtain according as nurses are furnished by a public foundling hospital, a private institution for such purposes, or by the ordinary agents or procurers of such service, the author proposes a law with the following provisions:

(1) Every woman who offers herself for service as a wet-nurse should possess a physician's certificate as to health and fitness.

(2) This certificate must proceed from a legally constituted physician, and must be presented forty-eight hours before the proposed service is to begin.

(3) Should a nurse give up her position, and desire similar service in another family, she must obtain another certificate under the same conditions as the first.

(4) Should a nurse offer her services without the customary certificate, she should be punished by fine or imprisonment.

(5) In the public applications of nurses for service, agents must specify the possession by them of the required certificate. If it is wanting, their application should be rejected, and the penalty prescribed in section 4 enforced.

(6) Every woman who offers service as a wet-nurse should present a book or paper containing a record of her service in that capacity, when she begins service in a family. Without such a document no one should be allowed to serve.

(7) In the public announcements of nurses their record should be referred to.

(8) All attempts to evade the foregoing prescriptions, whether by nurse or agent, should be punished by fine or imprisonment.

(9) Every woman who offers her service as a wet-nurse must also give evidence as to the time of her confinement and the certificate of baptism or of birth of her child, both properly attested.

(10) The conditions mentioned in section 9 must also be embodied in the public announcement of the nurse, in default of which punishment by fine or imprisonment should be enforced. Should the nurse be the subject of infectious disease, the police department should institute proceedings against both the nurse and the agent who procured her position.

(11) All agents who accept nurses for service without the foregoing qualifications should be fined according to the conditions of each offence.

(12) Each nurse's license should also mention the duration of her service, the cause of her dismissal, and the condition of nutrition of the child nursed by her. Without such facts she should not be allowed to resume service.

(13) Violations of the preceding section should be punished with fine or imprisonment.

(The foregoing regulations would be quite practicable in an European community, where everything which pertains to the public welfare is either supervised or controlled by the state. Some of them, indeed most of them, would be both irksome and impracticable, however, in this country, where the state leaves such matters to public sentiment and individual action. There is no doubt of the great need of throwing certain restrictions around the occupation of wet-nurse, both in the interest of the employed and the employer. It seems to us that there certainly is room for the establishment of bureaux, managed or supervised by physicians, in which proper registration and classification of wet-nurses could be made. While the employment of a wet-nurse is too often an unpardonable error, it is not infrequently an absolute necessity. An organized institution to meet the latter condition would be of great service and convenience to physicians as well as to the public.) A. F. C.

Dornblüth: Regulations for Protection during the Prevalence of Infectious Diseases among Children. (*Arch. f. K.* [abstracted], viii. 4.)

The author's suggestions refer to scarlet fever, measles, whooping-cough, and diphtheria. Scarlet fever is propagated by infection exclusively, and the infective material, which retains its activity with great tenaciousness, is developed only in the bodies of those who suffer with the disease. Children between the ages of two and five years are the most susceptible to the influence of the infective agent. The contagium is weakened in the presence of a free supply of air, and it is destroyed at the temperature of boiling water. The method of disinfection recommended by Pettenkofer consists in cleansing apartments and clothing with a mixture of ten litres of hot water, fifteen grammes of green soap, and two to five parts per thousand of sublimate. To prevent infection no one but the physician and the nurse should see the patient for a period of six weeks from the beginning of the disease, and the physician should always disinfect himself thoroughly after leaving the patient. This regulation must be rigorously carried out for the protection of schools when sporadic cases of this disease occur, and should the disease become epidemic the school authorities should immediately close the school. The most dangerous medium for carrying the contagium is milk, which should therefore be boiled before giving it to children at such a time. Measles originate exclusively by infection, the infective agent being very volatile, and being present at the time when the disease is introduced by the coughing and catarrh; it disappears, however, after the fever is over. Children from two to five years of age are also more susceptible to this disease than those of any other period of life. In scarlet fever general preventive regulations are always required, but in measles only those who are most exposed will need particular protection, and will include, especially, the children between the ages mentioned.

Whooping-cough is propagated by infection through the medium of the atmosphere. Children with this disease should be entirely isolated, and at home rather than in a hospital. While the transmission of the disease to unaffected localities is not so readily accomplished as is commonly believed, it is entirely proper that the sick-room should be kept thoroughly clean and well ventilated. They are most susceptible to diphtheria in whom the mucous membranes have already been attacked by pharyngeal catarrh, scarlet fever, whooping-cough, smallpox, etc. The disease is due to the location and proliferation of a specific morbid irritant upon sensitive mucous surfaces, and is contracted by the inhalation of the virulent matter which has been cast off by the patient. The development of the disease is favored by the crowding of people in damp, ill-ventilated apartments. The patient should be isolated from the rest of the family, and disinfection should be carried out with carbolic acid, chlorine and bromine vapors, etc.

A. F. C.

II.—MEDICINE.

Steffen: Pulmonary Emphysema in Children. (*Arch. di Patol. Infan.*, March, 1887.)

Persistent pulmonary emphysema in children rarely occurs. In order to understand the conditions which obtain when pulmonary ectasis is present certain preliminary considerations are referred to, as follows: When a child is in the horizontal position the respiration becomes accelerated and superficial, owing to the fact that the subjacent portion of pulmonary tissue contiguous to the posterior surface of the thorax sustains the weight of the portions which rest upon it. On the contrary, when the child is raised to the vertical position the breathing becomes slower and deeper. In inspiration, also, it is noticeable that the forces at work are more considerable than those which act in expiration, hence in the normal condition inspiration is a more energetic act than expiration. In the presence of pneumonia or bronchitis, on the contrary, the respiratory rhythm is reversed.

Some authors affirm that exaggerated inspiration, by means of which the air comes to the lungs with more than the normal force, is the cause of emphysema, the forcibly dilated alveoli losing their normal elastic force which would enable them to readily expel the air. Others have considered that emphysema results because expiration of the inspired air is impeded, the impediment consisting in a local or diffuse constriction of the bronchi and their ramifications, which is caused by spasm of the bronchial muscular fibres or by swelling of the bronchial mucous membrane, or by pressure which is exerted upon the bronchial ramifications from their exterior. The author believes that emphysema may be developed as well by forced inspiration as by impeded expiration, but that it is not inevitably determined by either. It is thought that another factor is concurrent in its production, namely, a certain indefinable predisposition in the respiratory organs, which is present in debilitated rather than in robust children. Some of these children present decided evidences of atrophy at death. During life there may have been no evidence of disease of the bronchial mucous membrane, the respiration having preserved the normal rhythm, though it may have been somewhat accelerated. In such cases the emphysema may be of moderate extent, or it may be such that the heart is entirely overlapped by the lungs. It is developed as follows: After inspiration has occurred, the forces which control expiration gradually become too weak to do their work. A certain degree of paralysis of the respiratory force must follow, and as inspiration becomes the more exaggerated, the more replete with carbonic acid does the blood become from the stagnation of the air in the alveoli and the impeded exchange of gases. In other cases inspiratory emphysema may occur in connection with bronchitis or pneumonia in segments of lung-tissue which are not involved in the primary disease. Though expiration may be more pronounced than inspiration in these cases, it is inspiration which forces into the intact portions of the lungs the air which is necessary for the ordinary atmospheric interchange, and which is increased in volume as the desire for air becomes more imperative. This leads again to the repletion of the blood with carbonic acid. Emphysema which accompanies whooping-cough is probably explained in accordance with the principles just mentioned. Cases in which emphysema is due to obstruction of the expiratory act are rare at any period of life, but especially in childhood. The mucous membrane of the bronchioles in small children may be much swollen without emphysema as a result, the air in the alveoli being reabsorbed in such cases, with the production of atelectasis. The same condition results if the lumen of the tubes is obstructed by retained secretions. On the other hand, in larger children, chronic rhinitis, causing impediment to the expiratory act, may result in emphysema. The author has never seen cases of emphysema which were caused by repeated spasm of the bronchial muscular fibres; neither does he deny that the condition may be caused by pressure exercised upon the external wall of the bronchi and their ramifications, especially if caused by enlarged and caseated bronchial glands. A. F. C.

Abercrombie: Hemiplegia in Children. (*Brit. Med. Jour.*, June 18, 1887.)

The causes operating in adult life explain but a small portion of the cases of hemiplegia seen in children. Those remaining can be divided into two groups,—one where the paralysis has succeeded some acute infectious disease, and the other occurring apart from such cause.

The writer has seen hemiplegia follow measles in four cases, scarlet fever in one, whooping-cough in one, and diphtheria in several. One interesting case following diphtheria is reported where the autopsy revealed an adherent thrombus in the right middle cerebral artery, and infarctions in the spleen and kidneys, though there was no heart-disease. In four more of the cases good evidence of syphilis existed. In one such case an autopsy made four years after the occurrence of the paralysis revealed a thrombus in the longitudinal sinus, atrophy of the left hemisphere, both cortical and deeper, thickening of the meninges, and disease of the middle cerebral arteries. This last-mentioned change was thought be the primary one.

The other cases are grouped under the heads traumatic, congenital, and those of unknown origin. Fourteen of the last group were under two years old, and may be regarded as cases of true *infantile cerebral paralysis.* Ten were girls.

The writer discusses the various theories advanced as to the pathological nature of these cases.

1. Strümpell's view of *polio-encephalitis.* This is objected to as theoretical rather than practical, and though possible, as yet lacks further proof.

2. *Capillary cerebral hemorrhage,* advocated by Eustace Smith, accounts very well for the pathological conditions found in some cases.

3. *Meningeal hemorrhage,* advocated by Goodhart chiefly, the convulsion causing first meningeal congestion and then hemorrhage.

It is objected to both varieties of hemorrhage that there should be no special liability of one part of the brain more than another to be affected, while it is well established that the motor area is the seat of changes in the vast majority of cases.

4. *Thrombosis of the veins and sinuses*, supported by Gowers. The exciting causes are given as debility, exhausting disease, especially acute specific diseases, blows, and the hot season. It may come in very young children without exciting cause.

5. *Embolism.*—Goodhart admits this as the explanation of the cases which follow the exanthemata; but the writer would extend it to explain most of the cases under consideration. Because the mode of onset in both instances is similar, the paralysis is unilateral and affects the side most convulsed, and the atrophy and sclerosis found in the late autopsies is limited to one side and affects the region supplied by the middle cerebral artery, well known to be the most frequent seat of embolism.

Congenital cases are due to injury received during delivery, followed by meningeal hemorrhage, or to intra-uterine injury with a similar result, leading to arrest of development.

Line: Clinical Notes based upon One Thousand Cases of Scarlet Fever. Second Paper. Treatment. (*Birmingham Med. Review*, April, 1887.)

The author's experience confirms the general impression as to the beneficial results of hydropathic treatment. Diaphoretics were uncertain, aconite and antipyrin produced sometimes dangerous depression, belladonna in a few cases was noticed to keep up the temperature; nothing was so satisfactory as the warm bath, rapidly cooled down to a few degrees below the bodily temperature by pouring cold water over the head of the patient.

Digitalis and ammonia are valuable in severe cases of scarlatina anginosa.

As a local application for the sore throat, the boro-glyceride has yielded such satisfactory results that it was rarely necessary to use any other.

The acetate of iron seemed to produce as good effects as the chloride, and was much easier of administration. Pure cream was often well taken in cases with severe throat-symptoms where all other nourishment, including milk, was refused. The writer thinks that with milk diet, rest in bed for three weeks, and the free use of aperients, the cases of scarlatinal nephritis will be few.

During desquamation, free inunctions with antiseptic ointments should be used after a nightly warm bath. The throats of convalescents should be frequently examined, as there is a peculiar tendency about the fourth week to a pseudo-relapse, which takes the form of an attack of tonsillitis, which experience in a number of cases showed to be capable of communicating the disease. Any patient is capable of giving the disease as long as discharge from nose, throat, ears, or suppurating glands lasts, or other complications, such as nephritis or empyema.

Crocker: Dermatitis Grangrenosa Infantum. (*Brit. Med. Jour.*, June 18, 1887.)

Four groups of cases were described.

In the first there was no history of varicella antecedent to the ulcerating eruptions.

In the second, varicella had preceded the sloughs or ulcers, which either followed immediately or developed later as sequelæ to the varicella pustules.

In the third group vaccination was the antecedent.

The fourth group included certain cases of local gangrene resembling cancrum oris. The individual lesion, however, was the same as in cases associated with varicella.

The cases varied in severity from those which were only superficial ulcerations to gangrenous patches large and numerous enough to cause death. Girls were oftener affected than boys.

The conclusions reached were that gangrenous eruptions were pathological accidents in which young children, especially of a tubercular constitution, were affected, and that the condition might supervene upon any pustular eruption, though most frequently varicella; the determining cause was probably a micro-organism from without; the initial lesions, both of the local and general eruptions, presented the same features.

Mr. Jonathan Hutchinson did not consider the tubercular constitution a great predisposing factor. The disease was no doubt most common with varicella and vaccinia, but might complicate measles, scarlatina, or syphilis.

E. W. Hope: Infant Diarrhœa. (*Liverpool Med.-Chirurg. Jour.*, January, 1887.)

Of one thousand deaths under five years the mode of feeding was as follows:

	Under 3 Months.	3 to 6 Months.	6 to 12 Months.	1 to 2 Years.	2 to 5 Years.
Breast alone	16	7	7	.....	...
Breast-food and bottle	110	85	85	38	...
Bottle alone	82	19	13	......	...
Bottle and food	74	119	186	36	....
Any food	......	14	......	156	52

From inquiries made, the writer believes that at least fifty per cent. of infants under three months and twenty per cent. of those from three to six months are fed on the breast alone. It follows from this that for every infant fed entirely by the breast who dies of diarrhœa, fifteen will die who are fed upon other food. Assuming that fifteen per cent. of the infants under three months are artificially fed exclusively, the deaths are twenty-two times as many as those among children partly or wholly breast-fed.

In children from three to six months old, taking as a basis that eighty per cent. get some breast-milk and twenty per cent. none, he concludes that six times as many deaths occur among those who get no breast-milk as among those partly or wholly breast-fed.

Forster: The Contracted Kidney in Childhood. (*Jahrb. f. K.*, xxvi. 1.)

This is an exceedingly rare accident in childhood. The two cases reported by the author were those of a brother and sister in an extremely neuropathic and psychopathic family. The father had been syphilitic, and at the time of this report was tabetic, two of his brothers suffered from nervous derangement, and their father developed a psychosis late in life. The mother of the two children was neurasthenic, and both of her parents and two other members of her parents' families were diabetic. The older of these two children, a boy, at the age of four and a half years, began to suffer from extraordinary thirst, with the passage of large quantities of urine of low specific gravity, without any traces of sugar or albumen as far as any investigations were made. The child weighed thirty-four and a half pounds when four and a half years of age, and at nine years of age, six months before his death, only thirty-nine and three-quarters pounds. At the time of his death only one of the permanent teeth had been developed. A short time before death he showed constant weariness and restlessness, especially at night, trembling of the limbs, unsteady gait, abnormally acute tendon reflexes, rapid breathing, and, during the last twenty-four hours of life, retention of urine. At the autopsy, the cerebral convolutions were found to be flattened, and there was a moderate quantity of fluid in the lateral ventricles; the pons flattened, and the portion connecting it with the medulla sclerotic; cerebellum very large but of normal consistency; areas of sclerosis in the posterior horns of the gray matter of the cord. The left ventricle of the heart was hypertrophied. The kidneys were no larger than those of a new-born infant, the capsules were adherent, and the contraction was especially marked in the cortex.

The disease of the younger child, a girl, was almost parallel in its phenomena with that of the boy. She died at the age of eight and a quarter years, three and a half years after the disease commenced. Several weeks before death she suffered from uncontrollable hemorrhage from the mucous membrane of the mouth. No autopsy was made, but in view of the history of her brother's case the diagnosis of contracted kidneys was made. As to the etiology, the neuropathic taint of the family, and the severe disease of the central nervous system in the children, suggests the association of these facts with the development of the kidney-disease. The precedent syphilitic condition of the father may also have had a bearing in the case. The great resemblance in the phenomena arising from contracted kidneys with those of *diabetes insipidus* is especially noteworthy. A. F. C.

Simon: Diseases of the Tracheo-Bronchial Glands. (*Arch f. K.* [abstracted], viii. 4.)

The lymphatic glands which surround the trachea and bronchi, when swollen, may exert pressure upon the trachea, bronchi, lungs, pleura, vagus and recurrent nerves, and aorta, and give rise thereby to different symptoms. The affections of these glands to which children are most susceptible are congestion, inflammation, hypertrophy, scrofula, tuberculosis, and cancer. The following may be mentioned as the principal conditions which are due to compression following enlargement of the glands. Pressure upon the large bronchi produces bronchitis, diminution of the lumen of the bronchi, and consequent impairment of the respiratory function. Pressure upon the superior vena cava through enlarged glands upon the right side causes stasis in the subcutaneous veins, and in those of the brain, dropsical swellings, cerebral congestion, and engorgement in the right heart. Pressure upon the nerves, especially upon the recurrent nerves, causes paralysis of the vocal cords, cough, and hoarseness. Many of the inflammatory conditions which follow such pressure are best explained as the result of irritation of certain nerves. An accumulation of these enlarged glands may compress the œsophagus and give rise to intense dysphagia. Tuberculosis or suppuration of the glands causes their adhesion to the parts to which they are contiguous, and perforation and discharge of pus may take place into the bronchi, the mediastinum, the pleura, the pericardium, the aorta, the vena cava, or the œsophagus. The most important of the physical signs in this condition consists in a moist sound, which is heard posteriorly in the intercapsular region, and anteriorly over the sternum. The auscultatory signs are of slight significance, for from the compressed lung-tissue may be heard diminished respiratory murmurs or bronchial breathing râles, and even amphoric sounds. If broncho-pneumonia is present at the same time with the enlarged glands, the results of auscultation with respect to the diagnosis of the latter condition are especially unreliable. The symptoms which arise from the swelling of the glands vary with the size of the latter, and the size varies from time to time, this being one of the peculiar features of the disease. The disease may take either of the following forms:

1. Simple acute adenopathy, which is readily curable.
2. Simple chronic adenopathy of spontaneous origin, or as a consequence of the former. This may undergo resorption, or it may continue a long time and then develop into a tuberculous affection.
3. Tuberculous condition of the glands.

Adenopathy has many symptoms in common with chronic bronchitis, emphysema, asthma, whooping-cough, phthisis, pseudo-croup, and polypi of the larynx. Its diagnosis is the more difficult since it is usually complicated by more or fewer of the before-mentioned conditions. Its prognosis varies greatly in different cases. If tuberculous elements exist in a given case, the issue is absolutely certain to be fatal. If the swellings are of an inflammatory nature, the outlook will be more favorable. Its duration may be very much protracted, and yet permanent recovery may take place even in very young children and infants. The disease is almost always secondary, like glandular diseases in other parts of the body, and the result of either a local or a general disease. It may be caused by inflammations and ulcerations of the trachea, bronchi, lungs, chest-wall, and mediastinum, or it may occur as a result of syphilis or tuberculosis. It is of common occurrence in connection with whooping-cough, measles, and acute and chronic bronchitis. Its treatment is often attended by success, and frequently measures may be instituted to prevent its occurrence. Children who have suffered from bronchitis or whooping-cough should be most carefully protected by hygienic precautions referable to clothing, residence, and diet. Exposure to inclement weather must be avoided, and they should be transferred to a mild climate during convalescence, if possible, especially during the winter and spring months. Should a cough persist after the intensity of the disease is over, it may be treated with tincture of belladonna and tincture of aconite. Quinine and digitalis must be given if indicated. Small doses of the syrup of the iodide of potash and the solution of the arseniate of potash should be given with each meal. During the winter months porter and cod-liver oil should be given. Whatever medicament be given, the condition of the stomach must be carefully watched. Laxatives should occasionally be used, and a moderate degree of counter-irritation upon the skin will be found very useful. A. F. C.

Comby: Varicella. (*Rev. Mens. des Mal. de l'Enf.*, April, 1887.)

The author concludes his studies upon this subject as follows, observing that in spite of its comparative insignificance the disease presents certain considerations of great interest:

1. It is almost constantly accompanied at the beginning by a bucco-pharyngeal exanthema, which may play a more important part than the general exanthema. If the vesicles in the mouth and upon the *velum palati* are discrete, they do not usually excite any particular inflammatory reaction. If they are abundant they may determine an intense stomatitis, a gingivitis, or an inflammation of the lips. In its severest form the stomatitis of varicella is manifested by salivation, swelling, pain, and interference with mastication. The vesicles of varicella may also attack the conjunctiva and give rise to conjunctivitis, and in exceptional cases they may even affect the cornea and leave marks which are indelible. In little girls varicella often produces a mild vulvitis, accompanied with painful micturition. These complications are of no particular gravity, excepting in cases in which the cornea is involved. The same cannot be said, however, of those cases in which varicella is accompanied by albuminuria and nephritis, for cases are on record in which the result has been fatal.

2. The differential diagnosis of varicella is a matter of practical importance, since it is affirmed that varicella and variola are quite distinct from each other, and neither provides immunity from or insusceptibility to the other. The differential diagnosis between these two diseases rests entirely upon the recognition of the typical vesicle of variola. Vesicular urticaria and pemphigus should not be confounded with varicella, as the author has shown in connection with cases narrated in this paper. A. F. C.

Eross: Investigations with Reference to the Temperature of Prematurely-Born Infants and Indications for supplying them with Heat Artificially. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], April, 1887.)

The author's investigations at the obstetrical clinic at Budapest showed that the temperature of prematurely-born infants was not always sub-normal. Of fifty cases which came under his observation the temperature was either normal or febrile in three-quarters of them, and hence artificial heat was not indicated. It was also found that the temperature of the body did not depend either upon the time when birth occurred or upon the weight of the body, and that frequent thermometric observations were necessary to prevent errors with reference to the temperature. Great differences were observed in the thermometric oscillations during the first eight days of life between infants who were born at term and those who were born before term. With the former a double lowering of the temperature, followed by an elevation of the same extent, was observed every few days, while with the latter it occurred only exceptionally. In premature children a sensible chilliness of the surface, followed by a gradual rise of temperature, was observed, the same as in those who were born at the end of gestation. In the former, however, the child is the more decided and of longer duration, and the subsequent rise of temperature occurs more slowly without reaching as high a point as in those who are born at term. Should there be a second elevation and depression of the temperature in premature children, it ordinarily occurred at the end of the second day or the beginning of the third, the depression occurring for a moment, and either a normal condition or a further depression following. It was observed that premature children were seriously affected by an atmospheric temperature which had no particular effect upon mature ones; in other words, the temperature for premature infants must be quite warm and even. The slight elevation of body temperature in the premature does not indicate a considerable loss of heat, but rather shows less force for the production of it. The physician should not seek to check the loss of heat by wrapping the infant in thick layers of cotton, but rather should furnish means for the internal production of a greater supply. A. F. C.

Laure: Cirrhosis of the Liver during Childhood. (*Rev. Mens. des Mal. de l'Enf.*, April, 1887.)

While the author is unable to add to the subject of curative treatment anything which has not been already advanced by writers upon this disease as it is seen in adults, he desires to call particular attention to the value of prophylaxis. He believes that cirrhosis of the liver in children is more frequent than is usually admitted. Many cases are probably overlooked in which the diagnosis of tubercular peritonitis is incorrectly made, and it is often difficult to avoid making this error. The free use of alcoholic liquors is responsible for many cases of this disease in children as well as in adults. It is believed that the influence of syphilis in producing this condition has been exaggerated by German writers. Infectious diseases are accompanied by hepatic lesions, which are usually transitory, but they sometimes persist and become a point of departure for true neuroses. It is impossible to establish a constant relation between the etiological factor of cirrhosis and the anatomical form of the lesion. At the beginning of this disease the liver becomes hypertrophied, and at its last period it is atrophied, but this rule is not without exceptions. The histological lesion which is usually observed is the typical hypertrophic fatty cirrhosis of Sabourin, with this difference, however, that the volume of the organ is diminished. The two principal symptoms of the disease are icterus at the beginning and ascites at the end. Physicians are cautioned to be on their guard for the consequences of certain eruptive fevers, which are usually but wrongfully classified as benign. The isolation of patients with contagious diseases should be strenuously enforced. A. F. C.

Bernhardt: Infantile Spastic Hemiplegia, together with Observations concerning Aphasia in Children. (*Jahrb. f. K.* [abstracted], xxvi. 1.)

In an analysis of eighteen cases of infantile spastic hemiplegia the following points were developed. With few exceptions the parents of the children were healthy. The original factor which determined the outbreak of the disease was often undiscoverable. The initial symptoms which were most significant were convulsions, and they were usually unilateral, and not preceded by prodromata. The convulsions were followed by complete or incomplete hemiplegia, the upper extremity being more frequently paralyzed, and accompanied by extension and contractures of the muscles. The sensibility was affected only slightly or not at all. The hemiplegia was on the right side in more than two-thirds of the cases. If the children were old enough to talk, aphasia, more or less marked, was an accompanying symptom; they could hear well, however, understood what they heard, and yet retained for years the difficulties of speech. Their articulation was usually of a nasal quality; some of them had the peculiarity of using certain words or phrases in a monotonous way for hours at a time, and others remained akataphasic until they were six or seven years old. There are cases of hemiplegia of the right side, however, in which there is no aphasia, and of four of the author's cases in which there was hemiplegia of the left side, there was no disturbance of speech in two of them.

In regard to the subject of aphasia in childhood, in connection with cerebral paralysis, his experience leads him to differ with those writers who say it does not exist, and he refers with confidence to the many reliable authors who have observed its existence in children in connection with disease of the stomach or intestine, and after violent mental excitement and severe infectious disease. All observations show that aphasia remains as a permanent condition or symptom in children in a relatively small number of cases. The few recorded cases of congenital aphasia should be carefully studied. From the author's observations and study of the literature of this subject he draws the following conclusions: (1) Aphasia in childhood is not a rare condition; the table of ninety cases recently collected by Steffen is incomplete. (2) Aphasia in childhood must be referred to the same etiological factors as in adults; the so-called reflex-aphasias which occur in consequence of infectious disease, are especially peculiar to childhood. (3) The aphasic conditions in childhood represent for the most part a characteristic symptom in infantile spastic hemiplegia. (4) Observations upon children show the desirability of cultivating the functional usefulness of the left upper extremity equally with the right. (5) Aphasia in children is, for the most part, atactic or motor; investigation as to the existence of agraphia and alexia is usually impossible; total amnesia is often observed. (6) The lesions in connection with congenital aphasia are unknown on account of the absence of suitable post-mortem investigations.

In the author's analysis of the symptoms of infantile spastic cerebral paralysis, he found that many children with or without precedent aphasia suffer at a later period with disturbances of the intellect in the form of mild dementia. With many, attacks of dizziness, epilepsy, and changes in the mental condition occur. The hemiplegia, which also involves the lower area of distribution of the facial, usually continues longer and more pronounced in the lower extremity than elsewhere, and is combined with conditions of extension in the different joints. Noticeable also are abnormal voluntary movements in the paretic extremities, atactic phenomena and movements of athetosis in the fingers; and in certain cases, when certain movements are made in the unaffected extremities, identical ones are also made in the corresponding parts of the paretic members. The sensibility remains intact, electric excitability is retained for both currents, the reaction of degeneration is absent, the patellar reflexes are retained without exaltation upon the diseased side. The hemiparetic extremities may remain undeveloped and immature. All investigators agree that the primary cause, whatever that may have been, is responsible for secondary atrophy of the hemispheres. Infantile spastic cerebral hemiplegia, in well-characterized cases, is readily diagnosticated and differentiated from other cerebral affections, but it is impossible to recognize the fundamental anatomical lesion in every case. A cerebral origin is indicated by the early appearance of convulsions which have a longer duration than is usual, frequently recur, and are often unilateral; also the involvement of the facial nerve, the hemiplegic form of the paralysis, with a preponderance of cases in which the upper extremity is involved, and the unaffected or even exalted condition of the tendon reflexes. In the cerebral form of paralysis there is intension in the paralyzed extremities, in the spinal form, relaxation; in the former, contractures in the upper extremities, in the latter, contractures in the lower; in the spinal form there is marked interference with development and atrophy, in the cerebral form athetosis and the combined movements referred to; also in the cerebral form electrical excitability is retained, while in the spinal form the paralysis is limited to certain muscles or groups of muscles. The purely cerebral symptoms are aphasia, anarthria, dementia, and epilepsy. The treatment, at first, should be antiphlogistic and anticonvulsive, subsequently it may be proper to pass weak galvanic currents through the head,—but with the greatest caution,—and also apply the faradic current in moderation to the paralyzed muscles. Passive movements and massage of the paretic muscles are also recommended, and suitable training of the organs of speech. Large doses of the bromide and iodide of potash will be found serviceable, and in some cases orthopædic treatment will be necessary. This treatment must be continued for a long time.

A. F. C.

Vogt: Investigations with Reference to the Influence of the Micro-Organisms of Vaccinia. (*Jahrb. f. K.* [abstracted], xxvi. 1.)

Feiler, the director of the Berlin Vaccination Establishment, discovered an offensive agent in vaccine cultures, but was unable to obtain pustules and immunity from variola by its use. Quist, of Helsingfors, followed the same line of investigation, but his methods made it doubtful whether he had obtained pure cultures. Bareggi found identical micrococci in variola and vaccine, and succeeded in producing an artificial vaccine; but he also did not work with pure cultures. Vogt is of the opinion, resulting from many experiments, that with individuals vaccinated with energetic vaccine protection may be obtained, even if vaccination-pustules are wanting; that protection begins on the twelfth day after vaccination; that vaccination repeated on the seventh day after the first operation *may* be followed by pustules of moderate intensity on the eighth or ninth day, but usually has a negative result. In calves these results come one or two days earlier, the entire course of vaccinia being of somewhat shorter duration than in man. The author's investigations showed that propagation upon nutrient gelatin yielded round colonies of a grayish color, with a clear border, which subsequently become irregular patches. With a power of eight hundred diameters small, active cocci are seen, in groups of two and four, which can be colored satisfactorily with gentian violet, fuchsin, and methyl blue. Several of the calves which were inoculated by these cocci proved insusceptible to subsequent inoculations with vaccine, and hence the cocci were called by the author vaccine-cocci. In addition to the foregoing, two other colonies of cocci were almost constantly isolated; (1) greenish-blue superficial points upon the gelatin, which with eight hundred diameters are found to be large cocci with slight power of motion; (2) yellowish-gray, round, superficial points in the gelatin, composed of immovable cocci in groups of two and four, which, when colored, cannot be distinguished from the vaccine-cocci. Both of the two latter forms are inert. The original paper should be consulted for the details of the inoculation experiments with pure cultures upon children and calves. No method has been discovered by the author whereby inoculation lymph can be obtained independently from the animal. On the other hand, in the case of three calves which were inoculated with vaccine-cocci obtained from pure cultures, immunity was acquired to subsequent inoculation, which was made with reliable vaccine. In five calves inoculation resulted in the development of nodules, and in four in a lymph which could be transmitted. The nodes developed from cultivated cocci are produced more slowly than those from vaccine (more than seven days being required), and they continue in a manner resembling that of the eruption produced in calves by the lymph of variola. The author thinks that a culture-fluid resembling blood-serum would produce even better results than those already obtained.

A. F. C.

Mohr: Instantaneous Cure of Whooping-Cough. (*Jour. de Méd. de Paris*, May 29, 1887.)

The author has found that fumigation with sulphurous acid will frequently succeed in immediately arresting whooping-cough. His methods consist in having the child dressed in entirely clean clothes in the morning and removed from the apartment; then, in the sleeping-room, as well as the other rooms occupied by the patient, his bedclothing, clothes, toys, and everything which is washable should be hung up; then sulphur should be burned in the rooms at the rate of twenty-five grammes for each cubic metre of space, and the rooms should remain closed and subjected to the fumes of the sulphur for five hours. Then everything should be aired, and at night the child should be put to bed in his room, which is thus completely disinfected. Nothing else is requisite, and even in rebellious cases the effect of this disinfected atmosphere will be found to be effective. A. F. C.

III.—SURGERY.

Feiner: Stenosis of the Trachea after Tracheotomy in Croup and Diphtheria. (*Jahrb. f. K.* [abstracted], xxvi. 1.)

After the disappearance of the false membranes in croup and diphtheria the mucous membrane of the trachea always presents more or fewer lesions, which must heal by granulation; there may also be pockets or folds due to an undermining process in the submucous tissue, especially from the influence of the canula; even the tracheotomy wound, which must necessarily be subjected to more or less rough usage, may undergo stenosis, especially because the divided tracheal rings on account of their elasticity receive a lateral pressure from the canula, by which the posterior portion of the mucous membrane of the trachea tends to bulge inward; and this bulging may remain, to a certain extent, after the canula has been removed. The exuberant growths of granulations are, however, the most fruitful source for the production of stenosis. The more abundant the granulations the more unfavorable will be the influence of the current of air which is drawn through the wound in inspiration, and this may even result in attacks of dyspnœa. Should these granulations undergo scabbing and the scabs be removed and spat out, spontaneous cure will result. The influence of the inspired air may produce swelling and attacks of dyspnœa, even without the formation of granulations. Michaelis has described such swellings of the mucous membrane subsequent to diphtheria underneath the vocal cords and on the anterior wall of the larynx, which interfered with the movements of the arytenoid cartilages, and caused insufficiency of the posterior crico-arytenoid muscles. The same writer has seen, under the glottis and opposite the tracheal wound on the posterior wall of the trachea, horizontal and vertical folds caused by cicatrization in the mucous membrane, submucous tissue, and peritracheal connective tissue in the upper parts of the trachea where the mucous membrane adheres less firmly to the tracheal rings. This condition demonstrates the fact that the narrowest part of the trachea is in the vicinity of the cricoid cartilage. The cartilages may also undergo contraction similar to that which affects the torsal cartilage in trachoma, or may be so soft as to yield to external pressure, or the trachea may be drawn inward, as it were, by the force of the inspired air alone, without any change in the cartilages, after the canula has been removed; or by the same force the trachea may be pressed downward, lengthened, and consequently narrowed. Instead of stenosis from atrophic softening of the cartilage, that condition (stenosis) may be due to hyperplasia. Stenosis may also be due to abnormal position of the cartilages, to inversion of the cartilaginous rings when the canula is too small, and fixation after such inversion. The most frequent situation for granulation-swellings is upon the tracheal wound itself. Small granulation-tumors, by impinging upon the tracheal wall or the lower surface of the vocal bands, may excite reflex spasm, and the tumor may even be squeezed between the vocal cords. There may also be interference with the function of the glottis without a precedent tumor in consequence of infiltration and subsequent contraction of the submucous tissue, the evidence of this appearing in the forced respiration of obstructed breathing. Contraction of the mucous membrane in the trachea may cause strictures of different degrees, likewise necrosis of the cartilages, with subsequent changes in the shape of the trachea. Well-constructed canulas, if not worn too long, never produce stenosis, and in many cases they actually prevent such a condition, especially in cases in which there is abnormal softness or extensive destruction of the cartilages. If the canulæ are badly constructed they will cause excessive granulation and swellings, which are due to pressure. The proper moment has come in which the canula can be removed when the patient can breathe and speak with the canula closed, and when the union of the divided cartilages with the edges of the wound is so firm that they do not collapse when a deep inspiration is taken. Dyspnœa may arise after the removal of the canula, which may progress to complete asphyxia, according to the degree of obstruction in the trachea. The dyspnœa is often influenced by psychical factors, such as fear after an unsuccessful attempt to remove the instrument, when the attempt is renewed. Dyspnœa may also be excited if there is catarrh of the air-passages, or if the patient assumes the dorsal position. Tracheal stenosis differs from the laryngeal form in that in the former the larynx is not moved, the patients incline the head forward, and phonation is either unchanged or not greatly changed. If, after an attack of dyspnœa, a fenestrated canula is reintroduced and dyspnœa recurs when its aperture is closed, the obstruction must be sought above the tracheal fistula. It is possible, however, for the lower end of the canula to be obstructed by forcible expiratory acts. The difficulty is often entirely solved by introducing a sound into the tracheal wound, or by inspecting the interior of the trachea with a mirror. The slow progress of stenosis of the larynx enables one to anticipate serious results. The great improvements in the laryngological art during the past ten years have a wonderfully favorable bearing upon the treatment of such conditions. The different methods of operative treatment are described, for the details of which the original papers must be consulted. A. F. C.

Naismith: Foreign Body in Bronchus; Tracheotomy; Recovery. (*Brit. Med. Jour.*, June 11, 1887.)

A boy of seven, while playing with some large glass beads, allowed one of them to slip into his windpipe. Violent coughing followed, and the bead could be felt with the finger rattling up and down the trachea. It was allowed to remain for a week before the parents would consent to any operative measures. It moved about the trachea at its bifurcation, sometimes obstructing one bronchus and sometimes the other. Tracheotomy was finally allowed to relieve urgent dyspnœa. The bead could be distinctly felt by a probe at the bifurcation, but it was decided to leave it. On the third day after the operation, it was forcibly expelled through the tracheal wound by a cough. The temperature had previously risen to 104.2°, and all the symptoms were alarming. Rapid convalescence followed the expulsion of the body.

Carbolic Acid as a Safeguard against the Bites of Insects. (*Lancet*, June 25, 1887.)

It is stated that a lotion of weak carbolic acid, sponged over the body once or twice daily, affords an efficient means of protecting young children against the bites of gnats and other small insects.

Frasey: Absence of the Occipital Bone and Skin in a Seven Months' Infant. (*Lancet*, June 11, 1887.)

The body was still-born, a female; the body was fairly nourished and well formed. A black mass at the back of the head proved to be the cerebellum exposed by reason of the absence of the occipital bone and skin covering it. On raising the cerebellum, the base of the skull could be seen and a piece of wood pushed down the spinal canal.

Clutton: Two Successful Operations for Cleft Palate in Children under Twelve Months of Age. (*Lancet*, June 4, 1887.)

The hard palate was involved in only one case, and in that to a slight degree. Both operations were done under chloroform: the parts were united by silk sutures. One united completely throughout, and in the other a small fistula was left near the hard palate, which closed spontaneously in a few months.

Murray: An Outbreak of Scarlatina in a Surgical Ward. (*Brit. Med. Jour.*, June 18, 1887.)

Twenty-seven persons occupied the ward,—twenty-three with wounds and four without. Five of the cases with wounds had previously had scarlatina; one, however, took the disease. Only one case without a wound was affected, none of these cases having previously had the disease. Only one of the six cases taking the fever was dressed antiseptically. The source of the outbreak was unknown. Of a good deal of interest was the occurrence at the same time of ill-conditioned wounds in persons not having scarlatina. One of these developed erysipelas.

Jouliard: The Prognosis of Burns in Children. (*Rev. Mens. des Mal. de l'Enf.*, May, 1887.)

In addition to the complications which may occur at each of the periods following burns which are common to all ages, such as collapse during the first few days, the accidents which accompany suppuration, tetanus, hemorrhage, subsequent adynamia, etc., there are others which are peculiar to childhood, which also render the prognosis much more grave. Of these, Guersant has called attention to the frequency of visceral congestions, especially of the lungs; while the author, in the narration of three interesting cases, points out other serious conditions. In the first of these cases the burns were of the third and fourth degrees, of great extent, and involved the thorax, abdomen, and right upper limb. Coma supervened soon after the accident, and persisted until death. Such a condition is not rare, and is analogous to the shock which follows severe traumatisms. It is exceptional, however, that it should be so profound as in this case. In the second case the burns were of the third degree upon the right upper extremity, while at the end of the fingers they were only of the second degree. For the first ten days everything was favorable, but on the eleventh sharp pains were felt in the extremities of the fingers, extending to the shoulder, and accompanied by painful adduction of the thumb. The dressings were infrequently made, and large doses of chloral were given, but tetanus soon supervened, and was followed in four days by death from asphyxia. No autopsy was made, and no hypothesis is offered for the unexpected result. The patient was a boy twelve years of age. In the third case the abdomen was burned extensively, the lesion being of the fourth degree, while the lesion of the genital organs and thighs was of the second degree. The child progressed favorably until the fifth day, when evidences of prostration and adynamia appeared, and these developed into the typhoid state, which was followed by death on the twentieth day after the injury. Another noticeable feature of such accidents in children is the slight degree of general reaction which in many cases follows deep and extensive burns, but the hopeful conditions are followed in a few days by adynamia, and this by death. The author concludes, therefore, 1, that the gravity of burns in children depends rather upon their extent than upon their depth; 2, that a greater or less degree of gravity of the general symptoms at the beginning does not constitute a good element of prognosis. Hence it is unsafe to predict a cure in cases in which the burns are extensive, though of slight depth, though they may not at first appear grave. Neither can one be very hopeful in cases of severe burns, though the evidences of shock are not immediately apparent. A. F. C.

Freyer: Tabes Dorsalis in Childhood. (*Rev. Mens. des Mal. de l'Enf.*, May, 1887.)

Three cases are narrated by the author, the ages of the patients being nineteen, sixteen, and nine years respectively. The patients were brothers; the father was healthy, and had not had syphilis. The mother was delicate, and suffered from heart-trouble. She had borne eleven children, of which the two eldest alone were healthy from birth. The next child, a boy, died of heart-disease; the fourth, a girl, from repeated attacks of convulsions. The fifth suffered from scrofulous phenomena from the sixth to the twelfth year; the sixth, who was the oldest of the three tabetics which form the basis of this paper, had scrofula from his tenth to his fourteenth year. The seventh died at an early age, having also suffered from scrofula. The eighth was the second of the sufferers from tabes, and never suffered with cutaneous eruptions. The ninth was premature, and was born dead. The tenth died at an early age, and had a scrofulous eruption. The eleventh had no cutaneous eruption, but showed the initial symptoms of tabes at the age of nine years. Of the three tabetics, the oldest, at the age of eleven, had a circumscribed tumor upon the left thigh which suppurated a long time. After his recovery it was observed that he walked with difficulty. Other symptoms were nystagmus, slow speech, and troubles of coordination in the legs and arms. The movements of the arms were exaggerated and jerky, and it was difficult for him to button and unbutton his clothes. His writing was irregular, the individual letters of each word being usually separated. His gait became unsteady, and his feet were thrown forward and backward. If he closed his eyes he would fall, unless supported. The tendon reflexes were absent from both knees; the dynamometric force in the arms and legs was normal; there was formication upon the soles of the feet; there were no fulgurating pains, but the patient complained of the *girdle* sensation; the sensation of touch was diminished in certain areas of the body, while sensibility to pain remained normal. The muscular sense was intact, and finally there was an organic heart-lesion, consisting in aortic insufficiency. With the second child the symptoms were similar to those which were experienced by the first, excepting that there was no nystagmus nor paræsthesia, and the sensibility to touch was diminished. In the youngest child the first symptom which was noticed was a kind of agitation of the entire body which was suggestive of chorea. The reflexes of the knees were diminished. After three months the knee reflexes were entirely abolished, and the patient tottered when the eyes were closed. A. F. C.

Escherich: The Etiology of Multiple Abscesses in Infants. (*Rev. Mens. des Mal. de l'Enf.*, May, 1887.)

Multiple abscesses are not found exclusively in debilitated children affected with scrofula or tuberculosis, for they sometimes occur with those who are apparently in good health. Their seat of election, as it were, is those parts of the body which are not rich in fatty tissue, for example, the hairy scalp. The author differentiates superficial abscesses which begin in the sebaceous glands from those which are more deeply located in the subcutaneous cellular tissue, and are connected with the sweat-glands. These abscesses are usually regarded as of tuberculous or scrofulous origin, but the author's bacteriological investigations have not confirmed such a view, nor do they appear to be of syphilitic origin. The author has never found the bacillus of tuberculosis in the pus from these abscesses; on the contrary, of nine cases which he investigated he found the *staphylococcus albus alone* in five, and in four *associated* with the *staphylococcus aureus.* These pyrogenic organisms are constantly found in nursing infants, whether sick or well, in the most superficial layers of the epidermis, and in the child's clothes. It has been demonstrated histologically that infection is caused by the penetration of these organisms into the excretory canals of the sebaceous and sudoriparous glands. Infection is easily accomplished in the regions where the epidermis is softened, whether by repeated washings or by the action of the perspiration. Consequently the seat of predilection of these abscesses is upon the thighs, the buttocks, or the occipital region of the head. Prophylactic treatment consists in the careful change and disinfection of the child's wrappings. After the abscesses have formed, they must be opened and irrigated once or twice daily with a solution of sublimate. In all the author's cases cure resulted in eight to fifteen days. A. F. C.

Knaggs: Intussusception, Irreducible and Gangrenous, treated by Resection. (*Lancet*, June 4, 1887.)

The patient was a strong boy of five, and the disease began with the usual symptoms. On the third day the bowel was inflated and the tumor disappeared, and it was thought to have been reduced. The subsequent symptoms proved that such was not the case, and the case becoming alarmingly ill, laparotomy was performed on the fourth day. The intussusception was into the small intestine at its lower portion, the intussusception passing three or four inches through into the large intestine. It was found to be irreducible and gangrenous, and, after being clamped above and below the gut, was resected. The patient did not rally, and died an hour and a half after the operation.

The paper then proceeds to discuss the relative dangers of inflation and abdominal section for intussusception. Eight cases are collected, certainly seven, and probably all in young children in which the intestine was ruptured by inflation or injection. The use of anæsthesia may lead the surgeon to employ undue force in injection, hence it is of doubtful value.

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POST-SCARLATINAL NEPHRITIS.

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BY the title of this paper I do not wish to imply that acute tubal nephritis, occurring in association with scarlet fever, differs in any important particular from that arising from any other cause; but I wish to confine my remarks to the disease as it occurs in children, and of all causes or associated conditions of this affection, scarlet fever stands first; and whatever is said of the disease in this connection will equally apply to it when arising from any other cause.

In my previous writings* on the subject of Bright's disease, I adopted the nomenclature and classification of Dickinson, which are based on the anatomical structure of the kidney, and are therefore to my mind the most scientific. In this paper I therefore propose to deal with a disease which is unfortunately very common, and one which is more or less well understood by every practitioner,—viz., acute tubal nephritis and its continuation into the chronic form.

Ætiology.—The view commonly accepted of the causation of this disease is, that the nephritis is directly due to the scarlatinal poison, and this opinion has the high authority of Dr. George

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* Liverpool Medico-Chirurgical Journal, July, 1883.

Johnson, who holds* "that all *the causes of renal disease have this common feature that they tend to produce a morbid condition of the blood.*† . . . *All the changes of structure commence in the secreting cells of the gland, and are the result of an effort made by the cells to eliminate from the blood some abnormal products, some materials which do not naturally enter into the composition of the renal secretions.* . . . The renal cells, in striving to separate the strange materials, become modified in their action and nutrition."

In scarlet fever you have undoubtedly a poison in the blood, whatever may be the nature of that poison, and the frequency with which acute tubal nephritis follows scarlet fever would seem to lend great weight to this theory. It is held that when the elimination of the *materies morbi* by the skin is checked, then an extra strain is thrown on the kidneys, which leads to the disease in question. It has even been asserted that in scarlet fever there is usually renal desquamation, and when the function of the skin is suppressed we get inflammation of the kidneys superadded. This statement is not founded on facts. In a large number of cases of scarlet fever, either during the fever or while the patient is convalescent, you get temporary albuminuria, which may last a few days and then pass away without there having been any symptoms which would lead you to suppose that such a grave condition as inflammation of the kidneys had existed; but even in these cases there is no evidence of any excessive renal desquamation, and in those cases where there is no albuminuria, I have not found any evidence in the urine of shedding of the renal epithelium. The simplicity of this theory of a morbific condition of the blood directly setting up the renal mischief through primary injury to the secreting structure renders it very plausible, and it has also the practical advantage of offering a working hypothesis in the line of prevention,—encourage the action of the skin, so lessen the work of the kidneys, and thus diminish the risk of nephritis. Dr. Whitla and others have questioned whether nephritis is not more common since the adoption of the practice of inunction of the skin in scarlatina. They hold that thus the action of the skin is checked, and so the risk of nephritis increased. Such is not my experience. I have never had any reason to believe that either albuminuria or nephritis was induced by this inunction. On the other hand, I believe that the sensitive nerves of the skin are to some extent protected by the grease in place of the exfoliated epidermis, and thus the risk of nephritis being induced by reflex action lessened. The hypothesis, therefore, in so far as it would tend to do away with any protection of the skin, may work mischief.

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* Diseases of the Kidney, 1852, p. 109. † Ibid., p. 105.

No doubt a septic condition of the blood may injure the kidneys, and inflammation may follow. Dr. Ashby, in a very interesting paper on "Some Points in the Pathology of Scarlet Fever,"* has shown that you may have septic or interstitial nephritis, occurring during the course of the fever, without any marked clinical symptoms. "The kidney-lesions are secondary or subsidiary to the septicæmic condition." But with such cases we are not in this paper immediately concerned. They are part and parcel of a general septic condition of body, and so found on the post-mortem table. We are now considering cases of nephritis which are part of the sequelæ of scarlet fever. The nephritis frequently supervenes very suddenly after exposure to cold, about the end of the third week, when the patient is very well, and when presumably the greater part of the scarlet-fever poison is eliminated, but when the desquamation has left the cutaneous nerves in a very sensitive condition, and the patient very susceptible of catching cold. Nephritis, perhaps, more frequently follows mild than severe cases, probably because less care is taken in the former cases. This would tend to shake our belief in the direct influence of the scarlet-fever poison on the renal cells, and as some epidemics are milder than others, and consequently generally less care taken, we may thus account for the frequent occurrence of nephritis in some epidemics, rather than adopt the irrational hypothesis evoked by some that in certain epidemics the scarlet fever seems to have a special predilection for the kidneys. As I have before stated, the nephritis frequently occurs late in the disease, when the patient is to all intents and purposes well, and the desquamation of the skin is the only evidence of the patient having had scarlet fever. What proof have we, then, that there is invariably a morbid condition of the blood, and that this is the invariable progenitor of renal disease? Our proofs are merely suppositions, legitimate no doubt, but still not proofs.

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* Medical Chronicle, vol. ii. p. 182.

Cases of nephritis occasionally occur where great care has been taken, when the patient has not been out of bed, and there is no evidence of exposure to cold or any check on the transpiration of the skin. In fact, albuminuria may be as readily induced in these cases by disorders of the intestinal tract as by any check to the action of the skin, and hence constipation is a common precursor of renal mischief, whether that be merely an active hyperæmia of the kidney, which quickly subsides, or passes on to inflammation. Keep the bowels open is a piece of good advice. I may be told that this eliminates morbific material, a proposition which I will not for one moment question. I am even prepared to grant that there is some poison at the root of the mischief, but how does this poison act, either directly and primarily on the renal cell, or indirectly on the secreting structure through the nervous system and blood-vessels? Dr. Johnson gives the sequence of events as a morbid condition of the blood, desquamation of the renal cells with checked secretion, and consequent retarded circulation. We have now to consider whether this be correct. My discussion of the etiology of this disease has amounted almost entirely to a destructive criticism of the theory of a direct influence of a morbid poison on the renal cells, and I cannot say that I have anything much better to construct in its place. However, in an interesting study like this it is well to examine as closely as possible the faith that is in us, and see that it rests on as firm and solid a foundation as we can construct.

I should say that perhaps in a fourth or a fifth of the cases of scarlet fever, either during the fever or convalescence, there may be found for a day or more slight albuminuria, with, perhaps, a few hyaline casts and a little renal epithelium. This is indicative of active hyperæmia, which may subside as quickly as it occurred and afterwards leave no trace of renal mischief. In these cases the Malpighian corpuscles are certainly more affected than the renal epithelium. Moreover, in cases of scarlet fever the renal affection generally commences as a glomerulo-nephritis, in which, as Klebs first pointed out, the primary and chief change takes place in the Malpighian corpuscles.

In my paper on "The Pathology and Treatment of Tubal Nephritis" I stated,* "In inflammation—and this is undoubtedly an inflammation—the circulation is first affected, and, just as in bronchitis the vascular turgescence precedes the bronchial secretion, so in tubal nephritis the active hyperæmia precedes the shedding of the renal epithelium. In inflammation the blood-vessels are greatly enlarged and the quantity of blood greatly augmented, with, at first, acceleration of the blood-current, quickly followed by slowing of the circulation and, finally, stasis. The influence of the nervous system in causing inflammation is not well defined. Perhaps inflammation can be most readily produced when the nervous influence is in abeyance, as evidenced by the greater liability of the eye to become inflamed from mechanical injuries after the fifth nerve is severed, and a person is more liable to get an attack of pneumonia from exposure during sleep than when awake. That the nervous system, however, has a direct influence in many cases can scarcely be doubted. Dr. Coats says,† 'Reflex irritation may produce, through the vasomotor nerves, a contraction of the arteries of an organ, and in the case of the kidney this contraction may conceivably be sufficient to bring the circulation to a stand-still. . . . If such a stagnation of the blood continues long enough, the vessels will be so damaged that when the circulation is restored inflammation must result.' Every one knows how quickly a chill brings back the albumen to the urine of a person recovering from acute tubal nephritis." I am convinced that the nervous system plays a more important rôle in the production of inflammation than is generally admitted. I know a person who can induce a nasal catarrh by simply placing his bare foot on a cold stone. The removal of the exciting cause quickly effects a cure, but if he happened to be suffering from an influenza, the experiment would have an aggravating and more lasting effect. In scarlet fever, like most of the fevers, there is a loss of vascular tone, a condition of vaso-motor paresis, so that, so long as the heart's action continues vigorous, there is low arterial tension and no venous engorgement. In very severe cases there is this same or greater deficiency in vascular tone and tension, but there is also great vital prostration with cardiac asthenia, so that the blood is not driven with much force, and you get passive congestion of all the abdominal organs, including the kidneys, with resultant albuminuria,—such as occurs in diphtheria and severe cases of pneumonia. When the fever subsides the vaso-motor paresis with loss of vascular tone continues for some time, but the arterial tension increases probably from accumulation of effete or imperfectly elaborated products in the blood. When, therefore, anything occurs to considerably raise the general arterial tension, such as a chill, or some imperfectly digested products from the intestinal tract, or the non-elimination of effete material owing to constipation, then the blood is driven with much force into the dilated renal vessels. This may simply amount to an active hyperæmia with temporary albuminuria, which quickly passes off on removal of the cause, or it may become intense and pass on to true tubal nephritis.

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* Liverpool Medico-Chirurgical Journal, July, 1888.

† Manual of Pathology, 1888, p. 78.

Pathology.—Dr. Ashby minutely describes the glomerular changes which take place in these cases, but he regards[*] "them rather as consequences than as causes of the early symptoms, and not an essential part at any rate of the primary attack." . . . He believes "that post-scarlatinal nephritis consists in an inflammatory congestion of the kidney on the type of a croupous pneumonia, the gorged capillaries relieving themselves by the exudation of liquor sanguinis into the tubules, but the choked condition of the kidneys is not complete or long-continued enough, except in a few instances, to cause death in a few days by uræmic poisoning; secondary changes, however, quickly take place, which are apt to lead to complete obstruction and anuria. The fatty changes which the epithelium undergo also interfere with their office of separating the urea from the blood."

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[*] Medical Chronicle, vol. iii. pp. 187–189.

Dr. Dickinson describes the morbid conditions of the various stages of acute tubal nephritis as follows: *

"1. The blood-dripping chocolate kidney of acute congestive nephritis, usually purely tubal.

"2. The large mottled kidney, with absolutely smooth surface and loose capsule, of chronic but usually not very protracted nephritis, as yet purely tubal. Of this the epithelium may be fatty or not according to circumstances.

"3. The large, white mottled kidney, still smooth or barely dimpled, of nephritis mainly or primarily tubal, but complicated with interstitial nucleation and incipient fibrosis. This is not to be distinguished, save with the microscope, from the preceding, of which it may constitute a later stage or a more severe form. As it advances, superficial retractions declare its character to the naked eye."

Klebs and Klein believe that the primary changes take place in the glomeruli, and that the tubules are only secondarily affected; whereas Johnson holds that the sequence of events occurs in the reverse order, and designates the disease acute desquamative nephritis. It is very probable, as Ashby has pointed out, that these nephritic changes are found in varying degrees in different cases, according to the stage of the disease and the intensity of the inflammation.

Dr. Ralfe tersely describes the distinguishing features of these two varieties of acute nephritis as follows: †

"*Intratubular nephritis.*—The kidneys much swollen, texture friable. The cortex increased in width and rendered opaque (buff-colored) by the cloudy swelling of the parenchyma. Considerable proliferation of the epithelium with some changes in the intertubular connective tissue. Glomeruli extremely vascular, distended with blood, standing out as small red points."

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* The Pathology and Treatment of Albuminuria, 1877, p. 88.

† Diseases of the Kidney, 1885, p. 198.

"*Glomerulo-nephritis.*—The kidneys slightly, if at all, enlarged, texture firm. Cortex dark chocolate color, extremely hyperæmic in the early stage, little or no cloudy swelling or proliferation of the epithelium, nor marked changes in the intertubular connective tissue. Glomeruli filled with a number of small, angular nuclei, which so compress and empty their capillaries as to render them pale, and on minute inspection to appear as small white dots."

Among the earliest physical signs of the pathological conditions which we are considering is the presence of albumen in the urine. The amount of albumen, although usually in direct relation to the extent of kidney-mischief, only indicates the state of congestion or lateral pressure in the Malpighian capillaries, and not the stage or form of the disease. We should, therefore, in every case, make careful microscopic examinations of the sediment, from which we infer the nature of the lesion, and we should also make a chemical analysis—quantitative and qualitative—of the urine, and more especially estimate the amount of urea excreted, which, as Dr. Carter has shown, will determine the degree of the structural changes.

In temporary congestion of the kidneys, which is of common occurrence during convalescence from scarlet fever, you may have a considerable quantity of albumen, but microscopical and chemical investigation show the derangement to be a trivial affair compared with those organic changes which we are now considering.

In my article on "The Pathology and Treatment of Tubal Nephritis,"* I entered very fully into the causes and pathological significance of the transudation of albumen. The subject has since been very fully discussed from various standpoints at the Glasgow Pathological Society,† but the limits of this paper will prevent me doing more than giving a brief summary of my own views on this question. It is generally held that in health the epithelium covering the glomeruli prevents transudation of albumen, and thus the renal capillaries differ from those throughout the body generally, which allow a sero-albuminous fluid to pass through their walls. Under certain conditions, some of which may have very little pathological significance, albumen appears in the urine, and its presence arises from increased lateral pressure in the Malpighian capillaries, and perhaps, also, in some cases, from the intertubular capillaries, when the tubules are denuded of epithelium. In perfect health I believe that serum-albumen is not found in the urine, at least not in such quantities as to be appreciable by the ordinary tests for albumen; so, when it is found, there is a deviation from health, and we have to examine the causes of, and in what direction the deviation tends, and the conditions under which the albuminuria arises. The quantity of albumen depends upon the amount of lateral pressure in the Malpighian capillaries, and the rapidity of the blood-current, or rather the amount of blood which traverses the capillaries in a given time, determines the amount of fluid.

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* Liverpool Medico-Chirurgical Journal, July, 1883.

† Glasgow Medical Journal, 1884.

We have now to consider how the varying degrees of pressure and velocity are produced, and in what relation they stand to each other. These two conditions may be said to stand, within certain limits, in an inverse ratio to one another—the more rapid the flow the less the lateral pressure, and *vice versa*. The lateral pressure depends on the static condition of the blood, and just in proportion as you introduce movement you convert the force of pressure into that of velocity. If you wish to drive a certain quantity of fluid through a tube, the velocity will depend on the force of propulsion, minus the obstruction to the outflow, with the inertia or viscosity of the fluid (there is no fluid perfectly mobile) and the friction of the tube; and the lateral pressure will increase as the outflow is obstructed, in short, in proportion as the static condition is maintained. Differences of pressure depend on velocities, or, in other words, on sectional areas, because the larger the area the greater the mass and the less the velocity.

The *vis viva* or energy imparted by the heart may be represented by the formula:

$$\frac{MV^2}{2} = \frac{1}{2}\frac{W}{G}\,2Gh = Wh = GMh.$$

Here *h* represents the height of the column of blood maintained by the cardiac contraction, and if the blood were still this force would simply be exercising pressure on the mass of blood, but once you introduce movement you reduce this static pressure. You convert the potential into kinetic energy. The velocity represented by the formula, $V = \sqrt{2Gh}$, depends on the square-root of twice the force of gravity multiplied by the square-root of the height of the blood-column maintained by the force of the cardiac contraction. Now in comparing relative forces the influence of gravity becomes *a constant*, and so may be left out of our calculations; if therefore the masses be equal, any increase in the force is converted into velocity, and the static condition or pressure is relatively diminished. The larger the sectional area of the capillaries, the greater the amount of fluid on which the force of the heart acts, hence the greater the pressure and the less the velocity. The quantity of urine excreted depends more on the velocity or quantity of blood traversing the kidneys than on the amount they contain at any one time, whereas the relative proportion of albumen depends on the static condition of the blood, or, in other words, on the state of congestion of the kidneys.

(To be continued.)

THE ARTIFICIAL FEEDING OF INFANTS.*

BY T. M. ROTCH, M.D.,

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WHILE recognizing the importance of feeding infants during the early months of life by means of human milk, we must allow that in civilized communities the necessity of supplying the infant with food not directly from the human breast must often arise, and will in all probability be a demand which will increase rather than decrease as our civilization advances; and when in addition to this we consider the great proportionate mortality of the artificially-fed over the breast-fed, and the difficulties which are so frequently met with in adapting the food to the individual case, it manifestly becomes a duty to carefully investigate the different methods of artificial feeding, and adopt some more uniform plan for starting human beings in life than is met with among physicians as a class and the laity as a whole, for diversity and not uniformity is the rule.

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* Read before the Obstetrical Society of Boston, May 28, 1887.

With the exception of the very small proportionate per cent. of inherited diseases which occur at birth, this diversity of method in feeding is the most prolific source of disease in early infancy. The group of symptoms which for want of a better name is represented by dyspepsia, difficult digestion, occurs most frequently in the three periods when the infant's digestion is likely to be tampered with,—namely, in the early weeks of life, when experiments are being made to determine what food will be best to start with; next, when in addition to the irritation arising from the beginning of dentition new articles of diet are added to the original food; and, thirdly, at the time of weaning, when there is often a sudden and entire change in the character of the food.

The proper management of the first of these periods is of the greatest comparative importance, because it is the time when the function of digestion is being established and is in a state of unstable equilibrium, and therefore, following the rule of functional establishment, the stomach is in its most active period of growth, and hence the most careful regulation of the bulk of the food given is needed to correspond to this activity in order that we should not weaken the digestive function by overtaxing its capacity and yet provide the proper materials for nutrition, thus avoiding by prophylaxis the dyspepsia of the later periods of infancy and childhood, the seeds of which are continually being sown in this early transitional period.

We therefore have the question not only of infantile digestion but infantile development to deal with, and we should at once recognize the fact that the problem of artificial feeding is not a simple factor,—namely, which food shall we give to the infant, —but is a combination of factors, of which the kind of food is only one, and all these factors, from which we deduce the general problem for the average infant and the especial problem for the individual, must approach as closely as possible to the analogous factors which nature freely presents to us for investigation,—that is, we must follow nature as closely as possible. Our scientific knowledge and ingenuity have not yet enabled us to follow nature exactly, and we therefore have not yet obtained an ideal method of artificial feeding; but we must, nevertheless, go as far as the present state of our knowledge will allow, thus gaining a little ground every year; and we must be especially careful not to be led astray by the fictitiously brilliant results which are reported from time to time in favor of certain foods, instances continually occurring where one food will fail and another when substituted for it succeed; and yet these successes are merely temporary, and the mortality always remains far above that of human breast-milk.

It is certainly wiser and more economical not to spare expense and trouble in arranging the infant's diet, for, as has been explained above, the period of active growth of an organ is the time when its function is readily weakened, and when once weakened the digestive function is a prolific source of annoyance and expense in childhood and adolescence. Cheap foods and cheap methods of feeding, unless they are the best that can be procured, should no more be tolerated, and in fact not nearly so much so, in the early feeding of infants than in adult life: we often, however, see a food recommended for a young infant because it is cheap and easily prepared, and yet where its well-known lack of nutritive ingredients would with adults at once stamp it as unfit for use.

What are the general factors of the problem which constitutes nature's method of feeding? We have first a receptacle, the human breast, which mechanically provides a fresh supply of food at proper intervals, absolutely prevents fermentation of the food before it enters the infant's mouth, forms the mouth by the process of sucking, incites to action the necessary digestive fluids, avoids a vacuum by collapsing as it is gradually emptied, thus allowing the food to flow continuously, and finally is practically self-regulating as to the amount of daily food according to the infant's age. Second, the food itself adapted to the infant's digestive function and for its development, by its temperature, 98° to 100° F., its alkaline reaction, and its chemical constituents. Given these factors, how nearly can we approach them artificially? Human ingenuity has not yet been able to devise anything which approaches the perfection of nature's receptacle, and the best that we can do to offset this complex mechanism is to adopt that which is exactly the reverse,—namely, a receptacle of absolute simplicity,—and thus combat the tendency to fermentation by, through perfect cleanliness, preventing the receptacle from becoming a source of fermentation. To meet this demand I have had made what are practically enlarged test-tubes, which not having any angles are readily cleaned.

The receptacle, however, has to receive a food which usually is non-sterilized, and hence, where the factor of fermentation appears to be prominent in disturbing the infant's digestion, the food should be sterilized before it is given to the infant.

The process of sterilization is most simply accomplished by placing the food in one of the above spoken of feeding-tubes, adjusting the rubber nipple as on any nursing-bottle, then drawing tightly over the nipple and well down on to the tube a strong rubber cot, which, not being perforated, completely excludes the air. The tube is then exposed to steam confined in any vessel for twenty minutes, which is sufficient to render it sterile, in the sense of destroying the developed bacteria and thus making it correspond to human milk; at the same time, so far as my investigations on this subject have gone, the steam, while it sterilizes, does not apparently alter the chemical attributes of the food, as is essentially the case where the sterilization is accomplished by boiling; then again, in the steaming process the receptacle is sterilized as well as the food, so that when the rubber cot is removed we have the food enter the infant's mouth as free from bacteria as has been shown to be the case with human milk by Esherich,* who experimented with the milk of twenty-five healthy women, and found, by keeping it in sterilized tubes, that it remained sterile for some weeks, while, on the contrary, in women whose temperature was raised from fissures and excoriations of the nipple and by general puerperal infection, bacteria were found in abundance. It is thus seen that this factor of sterilization is likely to be found of considerable importance in the future, and should certainly be called to our aid in those cases where the other factors of our problem are as nearly correct as we can make them, and, if for no other reason, because nature plainly tells us that a perfect food should be sterile, and, in fact, our practical clinical experience for years has taught us to withdraw the infant from the breast in exactly that class of diseases where we now know bacteria to occur in the milk. Reference has been made above to the developed bacteria; if it is desired to prepare the food so that it shall remain sterile for some time, it is necessary to sterilize for several days in succession, for the first sterilization, according to Dr. Harold Ernst, Demonstrator of Bacteriology in the Harvard Medical School, only destroys these developed bacteria, while the spores are left to develop later. Dr. Ernst also kindly placed one of my tubes in which there was a mixture of cream, milk, lime-water, and milk sugar in his sterilizer for twenty minutes and then in his incubator for twenty-four hours, and at the end of this time no change could be detected in the mixture, either in color, odor, or taste, all of which appeared to exactly correspond to a freshly prepared mixture of the same kind.

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* Baumgarten's Jahresbericht. Erster Jahrgang, 1885, p. 34.

I have devised a simple apparatus for household use, which can be made at any tinsmith's at small expense, and answers for the purpose of sterilization very well.

It is a round tin pail, eight inches in diameter and fourteen inches deep, raised on three legs, sufficiently high to allow an alcohol lamp to stand under it; four inches from the bottom of the pail on the inside is a perforated tin diaphragm on which the feeding-tubes stand while being sterilized.

The pail has a cover and handle. Water is placed in the bottom of the pail, and when heated by the lamp the tubes are soon enveloped in steam.

The process of sucking is accomplished by the rubber nipple as by the breast, and a small hole near the end of the feeding-tube prevents a vacuum being formed and regulates the rapidity of the flow, while it allows it to be continuous; this is done by rolling up the edge of the rubber nipple from the hole with the finger, or letting it cover the hole according to the demand shown by the infant when feeding.

The artificial receptacle is not self-regulating, and hence we must first determine anatomically the amount of food in bulk which nature provides for the average infant at different ages, and from these average figures deduce the proper amount for the especial infant, having also the feeding-tubes graduated for the more important periods of growth, for the purpose of continually impressing, upon the mother and nurse, what the physician only has the opportunity of telling them at the beginning of the nursing period,—namely, that the error is in giving too much food rather than too little, an error also which naturally results when, as is commonly the case, the usual eight-ounce nursing-bottle is provided as the receptacle at the very beginning of infantile life.

Diagram I. represents the stomach of an infant five days old, in life-size.

Diagram I.

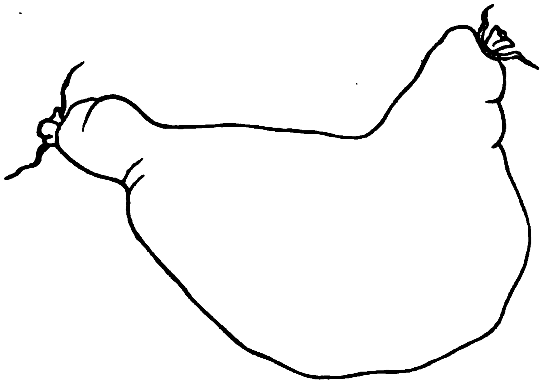
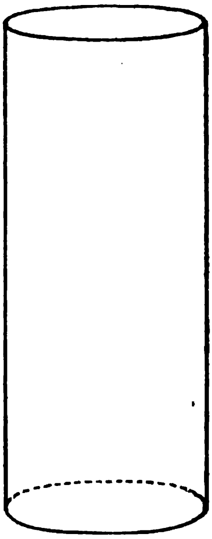


Diagram II.



The specimen was prepared by Dr. C. W. Townsend, and was found to hold twenty-five cubic centimetres.

Diagram II. represents the size of the tube, which is sufficiently large for each feeding during the first week; and when we consider the space which would be needed to represent the full-sized nursing-bottle, these two diagrams express better than can be explained by words the disproportion between the size of the infant's stomach and the amount which the mother supposes it should hold to keep her child from being starved.

Frolowsky's* investigations show that the activity of growth in the stomach's capacity can be represented by the ratio of one for the first week, to two and one-half for the fourth week, and three and one-fifth for the eighth week, while it is only three and one-third for the twelfth week, three and four-sevenths for the sixteenth week, and three and three-fifths for the twentieth week.

We thus see that there is a very rapid increase in capacity in the first two months of life, while in the third, fourth, and fifth months the increase is slight. Guided by these data, which we find correspond closely with the results of clinical investigations bearing on this point, we should rapidly increase the quantity of the food in the first six or eight weeks, and then give the same quantity up to the fifth or sixth month, unless the infant's appetite evidently demands more, when of course a gradual increase should be made. A considerable increase in the quantity needed, also, usually takes place between the sixth and tenth month.

Ssnitkin, after a series of careful investigations in the Children's Hospital at St. Petersburg to determine the amount which should be given in the first thirty days of life, finds that the greater the weight the greater is the gastric capacity. His general results also show that one one-hundredth of the initial weight should be taken as the starting figure, and to this should be added one gramme to each day of life. This, for example, gives the following amounts for each feeding, which closely correspond to the average figures which I have computed and introduced in Table I. on the basis of three thousand grammes as the initial weight. Thus, one one-hundredth of three thousand would be thirty grammes for the early days, and at thirty days the amount given would be $30 + 30 = 60$ grammes, about two ounces.

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* Inauguraldiss., St. Petersburg, 1876.

Table I.

The average initial weight of infants is 3000–4000 grammes = about 6–8 pounds.
The average normal gain per day in the first 5 months is 20–30 grammes = about 1 ounce.

General Rules for Feeding.

Age.	Intervals of Feeding.	Number of Feedings in 24 Hours.	Average Amount at each Feeding.	Average Amount in 24 Hours.
1st week .	2 hours.	10	1 ounce.	10 ounces.
1–6 weeks .	2½ hours.	8	1½ to 2 ounces.	12 to 16 ounces.
6–12 weeks, and possibly to 5th or 6th month . .	3 hours.	6	3 to 4 ounces.	18 to 24 ounces.
At 6 mos. .	3 hours.	6	6 ounces.	36 ounces.
At 10 mos. .	3 hours.	5	8 ounces.	40 ounces.

The weight, as well as the age, is necessary to determine the amount for each feeding in the individual infant, the rule being $\frac{1}{100}$ of the initial weight + 1 gramme for each day during the first month.

Illustrations of above rule to serve as guides for especially difficult cases.

	Each Feeding.		
Initial Weight.	**Early Days.**	**At 15 Days.**	**At 30 Days.**
3000 grammes.	30 grammes (about ℥1).	$30 + 15 = 45$ grammes (about ℥1½).	$30 + 30 = 60$ grammes (about ℥2).
4500 grammes.	45 grammes (about ℥1½).	$45 + 15 = 60$ grammes (about ℥2).	$45 + 30 = 75$ grammes (about ℥2½).
6000 grammes.	60 grammes (about ℥2).	$60 + 15 = 75$ grammes (about ℥2½).	$60 + 30 = 90$ grammes (about ℥3).

The younger the infant the greater the metabolic activity, and hence the greater need for frequent feeding, for nutriment is required not only for the excess of waste but also for the rapid proportionate growth; this makes the intervals of feeding a factor of considerable importance in the management of the infant's diet.

The figures in Table I. are merely approximate average computations taken from the results of a number of Russian, German, and American observers and from my own experience during the past ten years, and are only intended to be a guide for the physician in his management of cases of difficult digestion, for of course some infants will have a greater appetite and a greater power for digestion than others of the same age and weight.

I have experimented with the glass-blower in having tubes of different sizes made, and finally out of a large number of samples the following have been chosen as the most practical and the easiest to handle. For convenience I have had these tubes fitted to a box, which also contains directions for their use. The tubes as seen in Diagrams III. and IV. are merely enlarged test-tubes blown into a glass standard, and having a small hole at the mouth for the entrance of air.

DIAGRAM III.

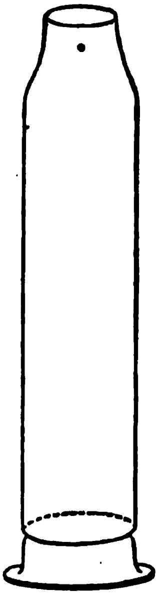
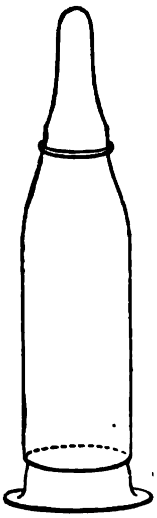


DIAGRAM IV.



A measuring-glass graduated to hold two ounces, and shaped like the larger tubes, is also in the box, and is used as a feeding-tube during the first six weeks, and later as a measure for the larger tubes. The smaller tube, Diagram IV., holds four ounces, has a calibre of one and five-eighths inches, and a height of six inches; it is to be used from the sixth week to the fifth or sixth month, and is intended to correspond to the above-described rapid growth of the stomach in the first two months, and its insignificant further increase in size up to the fifth or sixth month; it is represented in the diagram with the nipple adjusted for use. The large tube, Diagram III., has a calibre of one and six-eighths inches, a height of eight and three-fourths inches, and corresponds to the common half-pint nursing-bottle; it is represented in the diagram without the nipple, and shows the air-hole.

The box, besides the rubber nipple, contains a rubber cot for sterilization, test-paper for ascertaining the reaction of the food, and a bottle of soda for keeping the tubes pure during the intervals of nursing.

A medium-sized tube, which does not come with the box, but can be had separately, has a calibre of one and six-eighths inches, a height of seven and three-fourths inches, and holds six ounces. It of course is not a necessity, but is intended to be used between the sixth and tenth month, merely to enunciate the importance of careful supervision of quantity throughout the first year, as where a food qualitatively correct is being used, the error, as a rule, is in giving too great an amount quantitatively than too little, and a food which otherwise would be digested perfectly well often fails if it is given in too large an amount or at improper intervals; we may, however, here notice that while in breast-feeding frequent feeding is contraindicated from its altering the character of the food, in fact, condensing it, this trouble does not of course arise in artificial feeding, the food remaining the same, and we thus have a little more latitude given us in our management than we can have in regulating the breast-feeding.

The question of the food itself in artificial feeding is practically reduced to some modification of cow's milk or to cow's milk itself, for in most civilized communities cow's milk is far more easily obtained than other milks; and although the milk of other animals may approach more nearly the per cents. of the ingredients of human milk, they must all be modified, and if we modify at all, it is as easy to deal with cow's milk as with these other milks. Then, again, the various foods, patent or not, all depend for their basis on milk, and without this addition of milk would show but an insignificant percentage of many of the most important ingredients of the food, so that logically we should speak not of the various foods as such, but merely as adjuvants to cow's milk, for if this is thoroughly understood it will, in many minds, do away with much misapprehension regarding the apparently successful results of innumerable foods which, in reality, when given to the infant, are merely a means of modifying the almost universal representative of the artificial foods, cow's milk. Cow's milk, therefore, should be carefully compared with the standard human milk in order that we should know how nearly it resembles it, and Table II. is a comparison of the two foods, the figures representing the later and more reliable analyses. In considering the preparation of the various foods with reference to making them correspond in their analyses as nearly as possible to human milk, the problem is somewhat simplified if we recognize the fact that although the per cents. of the ingredients of human milk vary under certain circumstances, yet so far as the age is concerned, in the early months there is so little variation that a variation is as likely to occur between different milks of the same age as the same milk at different ages, so that we probably are doing wisely not to change the per cent. of the ingredients, but as the infant grows older give a food qualitatively uniform but of varying quantity.

From the comparison, we at once see that cow's milk itself differs so markedly from human milk that it evidently should be modified before being used as a food.

It may be modified by water, or by the patent foods, or by any adjuvant, such as barley-water, lime-water, or its own cream.

There is a very large number of patent foods, but they all claim about the same advantages, and closely resemble each other in their constituents, and in their honest endeavor to make cow's milk easily digestible, and also to make their resulting analysis agree as closely as possible with human milk. There are, however, certain differences by which we can divide them into classes, and we can speak of individual foods as representing their class.

Table II.

Human Milk.		*Cow's Milk.*
87–88	Water	86–87
13–12	Total solids	14–13
4.	Fat	4.
1.	Albuminoids	4.
7.	Sugar	4.5
0.2	Ash	0.7
Alkaline.	Reaction	Acid.
Small proportionately	Coagulable albuminoids	Large proportionately.
Scarcely perceptible in test-tube.	Coagulation by acids	Marked in test-tube: greatest with pure milk; least when mixed with lime-water or barley-water.
Not present.	Bacteria	Present.

My own opinion in regard to patent foods as a whole is that they must necessarily be unreliable; they are thrown on the market in such numbers that the competition is extreme, and when once they have made a reputation I cannot but feel that irregularities and changes, slight, perhaps, in the eyes of the makers, may unintentionally creep in and carry their analysis still further from that of the standard human milk than it was in the beginning.

Analyses show that there is a lack of uniformity from year to year, and that original claims are apparently forgotten or allowed to give way to cheaper production. A striking example of the truth of this statement is the world-wide reputation of Mellin's Food, with its printed analysis, by Dr. Leeds, showing that it contains no starch, its starch having been converted into sugar; and yet careful analyses made later by Dr. Charles Harrington, of the Harvard Medical School, show conclusively that all the starch has not been converted into sugar, and that it is present in very appreciable quantity,—perhaps, as it may be argued, not in sufficient quantity to do any harm, but, as it is claimed not to be present at all, it gives rise to an element of uncertainty. If we wish to be exact in the preparation of our food, and if we wish to introduce starch into the food, we should prefer to use a food where starch is acknowledged to exist, and can be reduced to the amount which we may deem necessary for the especial case; and yet just as the makers of Mellin's Food in good faith state that it contains no starch, while the unquestioned reputation of Dr. Harrington as a chemist proves that in certain cases at least they are mistaken, so in the patent foods which claim to contain starch in a certain percentage, that percentage may vary so much as to make any combination which we may wish to make an uncertain rather than an exact one. Besides the objections just given to these foods as a whole, it will be seen by referring to the representatives of each class as shown in Table III. (page 472), that, even taking the analysis as given by Dr. Leeds and also the percentage of the ingredients when mixed, according to the maker's direction, with cow's milk, there is a striking similarity in all of them, in that they all show a marked variation from the standard human milk.

The patent foods can practically be divided into those which are manufactured from cereals and those which are not. The first class contains the starch of the cereal unchanged or converted into sugar.

We have then, I. A cereal food with its starch unchanged, represented by Imperial Granum. II. A cereal food with its starch claimed to be converted into sugar, represented by Mellin's Food. III. A cereal mixed with condensed milk, its starch unchanged, and represented by Nestle's Food. IV. Condensed milk. V. The so-called humanized or peptonized milk.

I have prepared Table III. not only to show the ingredients of the representative foods (the analyses of the patent foods in Table III. were made by Prof. Leeds, and were published in the *Medical News* of July 21, 1883), but the ingredients of the food as it is usually given to the infant, mixed with cow's milk, and reference to this table and to the analysis of human milk on the upper line will not only show the errors of nutrition, which are made when we use them in this way, but enables us, by a simple process of calculation, to make any of them correspond more closely to the standard, for all of these foods are at times useful, provided that we use them intelligently for the especial case; but, of the foods represented in the table, we should avoid the patent foods for general use on account of the objection referred to above regarding their manufacture as a class; they are also the most difficult class of foods to make correspond to human milk.

An examination of Table III. will at once explain how difficult it is to make the artificial foods correspond to human milk by the methods which are usually employed, and also the errors in percentage which result from these methods; it is, in fact, a series of figures which represent the element of nutrition rather than digestion, and the merits of every food should be determined in this way before submitting it to the test of clinical experience, for our common sense must certainly be better satisfied if we know that the infant is not only digesting the food, but that the food itself is similar (or as nearly so as we can make it) in its proportions, ingredients, and reaction to the standard which, in its results, shows the lowest rate of mortality.

It will at once be seen that no matter how cow's milk is diluted with water it cannot be made to correspond to human milk. It is well, however, to remember that clinical experience has shown that infants seem, even in the early days of life, to digest the casein well enough, provided that it is sufficiently diluted,—that is, about four times, which reduces it to one per cent., and this will be of significance when we come to prepare a food which will correspond to human milk. If, however, we reduce cow's milk so that the percentage of albuminoids is one per cent., the fat and sugar fall so far below the standard that, although the ash has the proper percentage, yet we have an acid food markedly deficient in its nutritive quality.

Condensed milk is one of the most interesting foods which we are called upon to deal with, and represents in its production, its chemistry, and its clinical results an almost perfect illustration of all that has been so far said on the subject of artificial foods: it has strong advocates and strong opponents, but a simple consideration of its vital properties will easily explain the causes of its successes and of its failures.

Table III.

Comparison of Human Milk with Cow's Milk and Cow's Milk Modified.

(The figures are approximate and represent general averages.)

	Reaction.	Starch.	Water.	Total Solids.	Fat.	Albuminoids.	Sugar.	Ash.
Human milk	Alkaline.	0	88	12	3-4	1-2	7	0.1-2
Cow's milk	Acid.	0	87	13	4	4	4.5	0.7
Cow's milk .... 1 Water .... 2 — 3	Acid.	0	95.61	4.39	1.33	1.33	1.5	0.23
Cow's milk .... 1 Water .... 1 — 2	Acid.	0	93.4	6.6	2	2	2.25	0.35
Condensed milk	....	0	28	72	10	10	50	2
Condensed milk .... 1 Water .... 9 — 10	Neutral.	0	92.8	7.2	1	1	5	0.2
Condensed milk .... 1 Water .... 6 — 7	Neutral.	0	89.66	10.34	1.45	1.48	7.14	0.3

Imperial Granum. Fat........ 1.01 Albuminoids........ 10.51 Sugar........ trace. Ash........ 1.16 Starch........ 78.93 } 3 Milk........ 32 Water........ 64 — 99	Acid.	2.36	92.88	7.12	1.33 .03 — 1.36	1.33 .31 — 1.64	1.5 trace. — 1.5	0.23 0.03 — 0.26
Mellin's Food. Fat........ 0.15 Albuminoids........ 5.95 Sugar........ 48.2 Ash........ 1.89 Starch........present. } 3 Milk........ 48 Water........ 48 — 99	Acid.	Present.	91.74	8.26	2.0 .004 — 2.004	2.0 .17 — 2.17	2.25 1.44 — 3.69	0.35 0.05 — 0.4
Nestle's Food. Fat........ 1.91 Albuminoids........ 8.23 Sugar........ 38.92 Ash........ 1.59 Starch........ 40.1 } 1 Water........ 10 — 11	Neutral.	3.63	91.69	8.31	0.17	0.74	3.63	0.14
Barley-Water. As usually made with Robinson's barley contains *starch* 1.4. } 1 Milk........ 2 — 3	Faintly acid.	0.47	90.75	9.25	2.66	2.66	3.0	0.46
* Cream........ 2 Milk........ 1 Lime-water........ 1 † Sugar-water........ 3 — 8	Alkaline.	0	88.42	11.58	4.0	1.11	6.26	0.21

* The cream must contain from 14–16 per cent. fat.

† The sugar-water consists of milk-sugar ℥17¾; water O1.

The process of manufacture of condensed milk sterilizes it to a certain degree, and we thus have a very important factor in its favor which does not exist in cow's milk: it is also superior to cow's milk in that when mixed with water it is, although not alkaline, still not acid, and its large percentage of cane sugar helps to avoid the occurrence of fermentation, which so readily occurs in cow's milk. In Table III. the percentage of the ingredients of condensed milk—when diluted, as it commonly is, ten times—is given, and we at once see why it is easily digested but non-nutritious, for two of its ingredients, notably the fat, are found to have fallen below the standard as represented in the upper line of the table, the ash and casein only attaining the proper percentage. The nearest approach to the standard is obtained by diluting it with six parts of water, which, as shown in the table, results in giving the proper per cent. for the albuminoids, sugar, and ash, but the fat is still much reduced, and, unless supplied in some way, we should suppose that the nutrition would suffer, and this supposition appears to be supported by clinical results. That is, clinically, condensed milk represents a food easily digested but not sufficiently nutritious: the former explained by its low percentage of albuminoids and ash, its neutral reaction, its anti-ferment properties, and its proper per cent. of sugar; the latter by its great lack of fat. Among the poorer classes and in infant asylums it is a favorite food for the physician to prescribe, because the infants digest it so easily, but the testimony of those clinical observers who look beyond the temporary digestion to the subsequent nutrition of the child supports the view that condensed milk, even if we set aside the objections which, in general, arise from its being a patent food, must be modified by more than the addition of water before it can safely be given as a continuous food to the average infant. For preparing the way for other more nutritious foods in cases of difficult digestion, for convenience in travelling, and where for any reason the intelligence or the proper desire to take trouble about the food is lacking in the parents, condensed milk, from its simplicity in preparation as well as from its other attributes mentioned above, is a valuable addition to other more rational methods of artificial feeding. The commonly accepted opinion that condensed milk contains too much sugar is an error, for by referring to the table it will be seen that, as usually given, the sugar in the mixture is below the proper percentage, but if it is diluted six times, as recommended above, we then have merely the fat to deal with, and the reaction, which should be made alkaline. We must, then, modify this condensed-milk mixture; and not only is the fat an important factor in this modification, but the proper amount of fat: for although it is admitted that a large per cent. of surplus fat is frequently found in the napkins of infants whose digestion and nutrition are normal, and whose food is breast-milk, yet we have no right to conclude from this that a small per cent. of fat is sufficient for nutrition or that a large per cent. will be taken care of by this outlet; in fact, it is far more probable that nature introduces a certain per cent. of fat in human milk with a purpose which can only be accomplished by that per cent., and that it is an error to vary this per cent. beyond the variation which commonly occurs in average human milk. From what has been said above we would naturally expect that unless the standard per cent. was attained, or at least a near approach to it, trouble would be likely to arise, and this corresponds to my individual experience in the cases where the especial ingredient which was disturbing the success of the food was the fat: for I have found clinically that under the proper per cent. of fat the nutrition suffers, and that where the fat percentage was decidedly above the standard both nutrition and digestion were affected unfavorably. Unless, then, it is impossible to be more exact in arranging the percentage of fat in condensed milk, as is often the case among the poorer classes, where cod-liver oil is used as a cheap expedient for rectifying this source of error, the addition of indefinite amounts of fat to a food is to be deprecated, just as it is unwise to add indefinite amounts of sugar, and we should seek for a better combination than is offered to us in condensed milk.

Any food which introduces an element foreign to the ingredients of human milk is to be looked upon with suspicion, as it is not likely that we can improve on nature's method of adapting the food to the infant's digestive functions; we should therefore consider carefully before recommending the various classes of food which contain starch, which by referring to Table III. will be seen to be the foreign element which enters into the representative patent foods, Imperial Granum, Mellin's Food, and Nestle's Food.

It of course is not merely necessary to know the percentage of the different ingredients as they exist in the food itself, for what concerns us is the percentage as given to the infant, and the table therefore shows the sum totals of the milk percentages and the food percentages, and a glance at these figures tells us whether we have an easily digestible and nutritious food to deal with.

For instance, the success of Imperial Granum is evidently in its correct percentage of albuminoids and ash making it easily digestible, but its failures are readily explained by its reaction, its foreign ingredient, and its very low percentage of fat and sugar.

Reference has been made above to the capability shown by even very young infants to digest the casein of cow's milk when it is reduced to one or two per cent., and this is a factor which probably enters to a greater degree than is usually recognized in the easy digestion of these foods, and possibly too much credit has been given to the starch as a means of making the casein more digestible.

This was suggested by Dr. Arthur V. Meigs some years ago, and is worth considering, as it certainly is more rational not to introduce a foreign ingredient like starch into the food if we can make it digestible in some other way. Examining this question of casein percentage in the three large classes of patent foods represented in Table III., we find Imperial Granum 1.64, Mellin's Food 2.17, and Nestle's Food .74. Now all these correspond very closely to the casein percentage of human milk, that of Mellin's Food perhaps being rather high, and all these foods are found to be easily digestible; so also where barley-water is mixed in the usual way with milk, one to two, the casein of the resulting mixture is notably diminished in amount and naturally is more easily digested than when it stands at a higher per cent., as it does in cow's milk undiluted. The fat and sugar also are very notably diminished in all these mixtures. We therefore find from the table that there is a decided failure to fulfil the factor of nutrition when cow's milk is modified with these foods, and that all of them need still further modifications, some in one ingredient and some in another, that they all contain a foreign ingredient, and all, when mixed and prepared for use, fail in that important requisite for at least the early months of life, an alkaline reaction.

There are, of course, many other foods which might be spoken of, but they all come under one or the other classifications above referred to. It may be well, however, to say a few words about peptonized milk. This is cow's milk with its casein partially or entirely predigested by means of the extract of pancreas and soda. Now there is no doubt but that the casein of cow's milk has been a source of trouble to the infant's digestive apparatus, and under certain circumstances can, with great benefit to the infant's digestion, be treated by predigesting it for a time and thus allowing a stomach, which otherwise digests well, to rest and recover itself. It is of use, also, where a decided idiosyncrasy of the individual precludes the digestion of this especial ingredient of the milk; but besides the probability that the indigestion is often attributed to the lack of power to digest casein at all, while in fact the stomach is simply rebelling against an amount of casein above the standard per cent. or against some of the many other factors of the problem, it would seem that for the average infant digestion this predigesting of the casein or any other constituent of the milk is contrary to nature's teaching. There are certain natural functions which should be allowed to act as they do on human milk, and it seems irrational and contrary to the laws of physiology not to encourage all the functions to act naturally, each in its own province, instead of forestalling their action and allowing them to fall into disuse and thus be weakened. The baby's stomach is intended to digest casein, and not to have the casein digested for it. Clinically, also, the use of peptonized milk supports this view, for, so far as I know, no very brilliant results have been obtained from its use. Peptonized milk, then, is a food consisting of too large an amount of digested casein, too little sugar, and a very large over-proportion of ash.

The question next arises as to whether cow's milk can be modified without the use of patent foods or foreign ingredients and made to correspond to the percentages given in the upper line of Table III. This has been accomplished, with more or less success, by the addition of fat in the form of cream and by alkalies. It seems to me, however, that unqualified credit should be given to Dr. Arthur V. Meigs, of Philadelphia, not merely for devising the mixture which will be spoken of presently, for any good mathematician and chemist could have done that, but for carrying out the principle which it has been one of the chief objects of this paper to inculcate,—namely, to prepare the food free from foreign ingredients and, by chemically altering the constituents of cow's milk and especially reducing the casein to one per cent., to clinically adapt the food to the average infant's digestion. Common herd cow's milk can be diluted until the casein is reduced to one per cent., the reduced fat is then raised again to the standard by the addition of cream of a known per cent., and the sugar is also brought up to the per cent. found in human milk by means of sugar of milk. The ash is reduced to the proper per cent. at the same time that the casein is, for if we divide the average per cent. of albuminoids and of ash in cow's milk by four, we obtain the per cents. of albuminoids and ash as they are found in average human breast-milk.

It will be noticed that the figures in Table III. give the per cent. of the ash as a whole, although we know that a number of different ingredients make up the analysis of this portion of the milk. In the future, chemistry will in all probability give us exact data regarding this analysis of the ash, and we can then by computation make a corresponding combination in the artificial food. At present, however, we are forced from want of sufficiently accurate knowledge on this point to compute the ash as a whole. Empirically, Dr. Meigs has shown that by combining two parts of cream containing from fourteen to sixteen per cent. of fat, one part average milk, two parts lime-water, and three parts sugar-water, the latter consisting of seventeen and three-fourths drachms of milk-sugar dissolved in one pint of water, we have an alkaline mixture with the percentage of its ingredients closely corresponding to that of human milk.

The figures in Table III. are the result of an analysis made by Dr. Charles Harrington of a mixture made as directed above, and the similarity to the figures in the upper line of the table representing the analysis of human milk is very striking. A number of analyses have been made for me by Dr. Harrington at different times and with different creams, and they have all corresponded closely to this one, provided that an analysis of the cream was first made in order that the proper per cent. of fat should be added to the mixture.

To avoid the necessity of having the cream analyzed, cream made by the centrifugal process can be used, for this has a per cent. which varies very little from thirty-two, so that by diluting this cream with water one-half we have a cream with a per cent. of about sixteen, which is what is usually needed for the average infant digestion.

It is possible, then, in artificial feeding, to approach the standard human breast-milk much more nearly than is usually attempted, and there is no reason why clinical results should not be much improved if physicians will only take additional time and trouble to follow more uniformly nature's teaching. In all classes of life a much greater amount of time, expense, and thought is given proportionately to the preparation of food for the adults of the family than for the infants, and this is a mistake both from a humanitarian and an economical point of view, for the infant is much more susceptible to irregularities of diet, with their resulting suffering, than the adult, and when once the train of symptoms usually called dyspeptic is established, infinitely more trouble and expense is entailed than if more exact methods of feeding were adopted before the digestion has been tampered with. In the early weeks of lactation, after the mammary function has been fully established, it is well to have a number of analyses made of the mother's milk, and to keep the results as a control record to act as a guide for the preparation of an artificial food in case, as so frequently happens, something should occur to end the nursing at an early period, for it is highly probable that the digestive function of the individual infant may have certain idiosyncrasies which correspond to some idiosyncrasy in the percentages of its mother's milk, and in cases of difficult digestion where the artificial food, which has been made to correspond to the analysis of average woman's milk, fails to agree, reference to this control record may accomplish the solution of the problem sooner than if we had to ascertain experimentally, by changing in turn the percentages of the different ingredients, in which ingredient the idiosyncrasy of this especial infant was to be found. The assistance of the skilled chemist is too little sought after in determining these questions of infantile digestion and nutrition, and in the future must necessarily be made use of if there is to be any advance for the better in this subject of artificial feeding.

Many instructive cases could be cited, and must occur in the practice of every physician, illustrating the importance of not omitting the careful regulation of every factor of the problem, when we attempt to substitute an artificial food for the natural method of feeding, and proving that no one factor can be given undue prominence at the expense of the others, without in some way causing disturbance to the digestion and general nutrition. Making the food alkaline will at times rectify an otherwise intractable digestion: again, as in a case of Dr. Ernst's, sterilization was the only change that was needed.

I have a number of cases showing the importance of a precise regulation of the fat percentage, and also of the sugar and the casein, while, many times, the food, although chemically correct, has proved a failure because it was given in improper quantity or at irregular intervals.

Where an infant, then, is to be fed with artificial food, give precise directions as to the times of feeding, the amount at each feeding, and the feeding apparatus which is to be used. See that the analysis of the food corresponds as closely as possible to that of human milk; give instructions as to the proper temperature of the food; see that the reaction is alkaline, and then if there is any difficulty with the digestion, sterilize the food. If this is not successful, refer to the control record and adapt the food to any maternal idiosyncrasy shown by this record. If no control record has been kept, experimentally try to discover the especial idiosyncrasy of the individual infant by changing the per cent. of the fat, sugar, casein, or ash.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.[1]

BY JOHN M. KEATING, M.D.,
AND
WILLIAM A. EDWARDS, M.D.

(Continued from June Number.)

VALVULAR DISEASE.

HAVING considered the anatomy of the heart, the rationale of its sounds, the fœtal circulation, and the congenital anomalies of the heart and circulatory vessels,* we are fully prepared to correctly interpret the murmurs which occur in the heart and great vessels. Heart-murmurs are modifications in, or replacement of, the normal heart-sounds by certain new and adventitious sounds which we designate murmurs. These new sounds are either produced within the heart (valvular murmurs), on its surface (friction-murmurs), or in the blood-current within the heart or great vessels at its base (hæmic or functional murmurs).

We also find murmurs in the heart unconnected with any structural lesion, to which we will refer later on in our study.

It will be serviceable for a moment to consider the distribution of the blood-supply in the valves, as it has an important bearing upon valvular disease.

E. Coen† has experimented on the human heart, and the heart of the various domestic animals, in order to study the blood-supply of the cardiac valves. In order to obtain complete injections he studied the hearts of the fœtus and new-born children. His injections were made with gelatin and Berlin blue. He found (1) in the pulmonary and aortic semilunar valves no vessels in the substance of the valves.

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* See Archives of Pedriatics for February.

† Blood-Supply of the Cardiac Valves; Bullet. delle Scienze Med., Sept. 1886; London Med. Rec., March 15, 1887, p. 116.

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[1] Copyright, 1887, by JOHN M. KEATING, M.D., and WILLIAM A. EDWARDS, M.D.

The vessels that come from the cardiac parietes with the muscular fibres stop at the margin of implantation of the valve itself, and then form a very distinct and fine net-work, sharply limited. (2) In the auriculo-ventricular valves blood-vessels are always present, which starting from the margin of implantation of the valves extend to them in a fine net-work. Three or four principal branches extend into the valve, and subdivide into an irregular net-work. This net-work is prolonged to the point of implantation of the chordæ tendineæ, either in closed loops or with very fine terminal branches. The thickness and compactness of the net is greater towards the point of implantation of the valve than towards its free margin. Numerous vessels start from the papillary muscles, and extend for a certain distance along the chordæ tendineæ; but Coen has never seen these little vessels pass through the whole length of the chordæ tendineæ, nor their anastomosis with the capillary net-work of the valves, as Luschka, Henle, and Krause assert.

The vascularity of the auriculo-ventricular valves must, therefore, be admitted, but not that of the semilunar valves.

Let us first, then, consider endocardial murmurs, valvular disease, as at this situation we are able to detect the disease by the physical signs.

These murmurs have a common quality, they are all blowing; yet the sound itself may present all variations in the musical scale. Much time has been spent by writers in endeavoring to classify them by their relation to some familiar sound, as rasping, filing, sawing, blowing, cooing, and sighing, all of which are, however, irrelevant, as they teach us but little as to the real source of a murmur.

Most endocardial or valvular murmurs are due to a change at the valvular orifices, either a narrowing or stenosis or an insufficiency, with inability to close the aperture, permitting regurgitation. The possible valvular murmurs in the heart (exclusive of certain congenital defects, as slits and perforations) may be represented as follows:

$$\text{Mitral valve . . } \begin{cases} \text{Regurgitation.} \\ \text{Obstruction.} \end{cases}$$

Tricuspid . . .	Regurgitation. Obstruction.
Aortic . . .	Regurgitation. Obstruction.
Pulmonary . .	Regurgitation. Obstruction.

We thus see that it is possible to have two murmurs at each valve, or eight in all. Some of these are, however, of extreme rarity as primary murmurs; it is rare, indeed, to meet with a tricuspid stenotic murmur; so, also, are the murmurs at the pulmonary orifice and valve rare except as congenital disease, as we saw earlier in our study. So of these eight murmurs we can practically exclude a tricuspid narrowing and consider the murmurs at the pulmonary area as congenital, with, however, certain exceptions, which we will note under the appropriate heading.

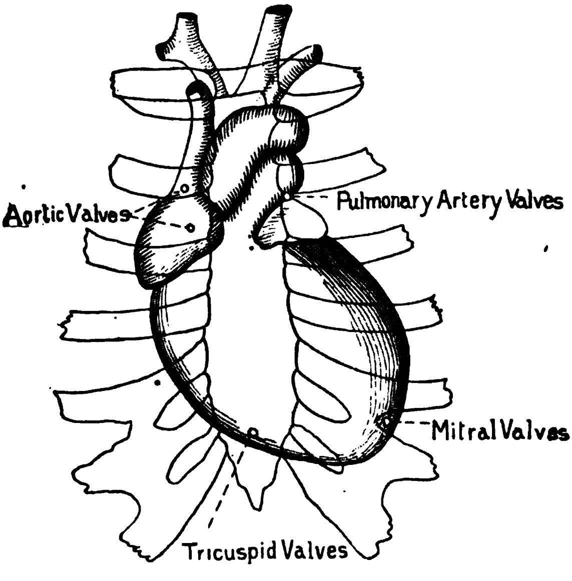
These murmurs have different effects on the sounds of the heart: some accompany the sound throughout its entire duration; others, again, may be substituted for the normal sound; again, others may precede the sound. In many cases it is indeed difficult to say whether the murmur occurs with the systole or during the diastole. In order to determine this fact, it is well to time the murmur with the apex-beat or carotid pulse; that sound which occurs synchronously with the heart-beat is systolic, no matter what its characteristics are.

Valvular murmurs are not always heard with equal distinctness; change of the patient's position may cause them to disappear or become very faint. On the other hand, exercise will cause the abnormal sounds to become accentuated. Indeed, we have observed cases in which the murmur was absent at all times when the patient was at rest. Should, however, the cardiac action become too rapid, we may be totally unable to differentiate the murmur, especially with children who normally have a quick circulation.

Sometimes the patient may himself recognize the murmur, or it may be audible to those around. Such a case is recorded by Osler of a child, æt. eleven years, in which the murmur could be heard with great distinctness several feet from the patient.

Murmurs are sometimes heard in the recumbent position which are totally inaudible when the patient is erect. Hutchinson* believes that this is a good diagnostic point, as anæmic murmurs are best heard with the patient recumbent. We are unable to satisfy ourselves of the fact stated by many authors, that pressure of the stethoscope will intensify valvular murmurs.

Having determined the existence of a murmur, we must now definitely locate its seat and its character, whether it is an obstruction in the flow or a regurgitation. This is, of course, determined by the fact that a sound has its maximum intensity near its seat of production, and, all things being equal, the closer we approach this seat the louder will the murmur become.



The figure, taken from DaCosta, serves to illustrate the four points at which we endeavor to isolate sounds produced in individual valves, remembering always that the points marked in the illustration are not the anatomical seats of the valves, but are the situation at which our ear will most closely approach the valve; the valves themselves lie about opposite the third intercostal space at the left border of the sternum and slightly beneath the bone. Placing our ear or stethoscope at the apical impingement and hearing a murmur at or near this apex-beat, we conclude that it is produced at the mitral orifice; if its intensity is greatest at the ensiform cartilage or a little above it, then we conclude that the tricuspid orifice is at fault; if, on the other hand, we determine that the murmur is heard with greatest distinctness at or near the second costal cartilage on the right side ("aortic cartilage") or a little farther down the sternum, about opposite the third intercostal space, we are to decide that we are dealing with a case of aortic valve disease.

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* Am. J. Med. Sci., April, 1872.

The pulmonary artery and valve are so rarely the seat of disease, except in congenital cases, which we have already considered, that it is sufficient to call attention to the cut for the manner of determining its site. Mitral murmurs are occasionally heard with startling distinctness in this so-called pulmonary artery region.

After having determined the existence of a murmur and its relation to the cardiac rhythm, we are then to seek out its line of transmission, às it is a well-recognized law in physical diagnosis that a murmur is carried or propagated in the direction of the blood-current; for example, an aortic obstructive murmur will be heard at its seat of production and also in the neck circulation, sometimes in the subclavian or brachial, or even in the external iliac.

Mitral regurgitation.—The valve is usually rendered incompetent by rheumatic endocarditis, which may have been congenital or post-natal in origin, or by the other morbific actions considered under the head of endocarditis. Cases are recorded in which regurgitation has occurred owing to imperfect development of one or more leaflets of the valve, although this is a relatively much less frequent congenital anomaly than in any of the other valves; again, several of the chordæ tendinæ may be either congenitally shortened or contracted following endocarditis, and pulling the curtain from its normal position, thus causing irregularity in its action or adhesion of the point of the valve to the ventricular wall, may cause abnormal action.

In order to determine the existence of a mitral murmur we may proceed as follows: Listening over the base of the heart and determining the existence of a murmur, we would then place our ear or stethoscope over the apex-beat, and if the valve is permitting regurgitation of the blood we will realize the fact that the abnormal sound is here heard with maximum intensity, and that it is systolic in time. Furthermore, we will also determine the fact that the murmur may be heard in the left axilla and at the point of the left scapula, remembering, of course, that the murmur in this case is not following the law of transmission above noted, because there is no blood carried in the direction under consideration, but that we simply hear the murmur at these points because during systole the heart rotates upon its axis, the left ventricle more nearly approaches the bony chest-encasement, and at the points named is covered by a smaller amount of lung-tissue and a small amount of chest-wall, and consequently is nearer the observer's ear; hence the sound becomes more intensified at this time. Sometimes the murmur will not be carried beyond the axilla, failing to reach the scapula; again will we meet a regurgitant murmur, which will be localized entirely to the apical region.

In certain cases of mitral regurgitation, the murmur is heard with startling distinctness in the so-called pulmonary artery region. Naunyn's explanation of this has always seemed to us to be the correct interpretation; he first says that the situation of maximum intensity in these cases, in the second left intercostal space, does not correspond exactly to the place where the sound of the pulmonary artery is heard; that is to say, not quite at the edge of the sternum, but a little distance from it, or at a point which almost corresponds with the situation of the left auricular appendix, which winds around the pulmonary artery and lies in front of it. Now in a case of mitral insufficiency the abnormal current of blood flows into the auricle, and as the appendix freely communicates with the auricular chamber, we can readily see how it is that in certain cases, when the appendix is long enough to approximate its tip closely to the anterior wall of the thorax, we hear a mitral regurgitant murmur in the pulmonary area. We may state that localization of murmurs in young children is rendered more difficult by anatomical conformation, the small relative size of the heart, and the proximity of the ear to the heart itself.

The diagnosis of a mitral regurgitation is not completed until we have recognized the *local* and *general changes* consequent upon its existence. It is also upon the gravity of these concomitants that we in great part determine the significance and prognosis of the affection.

In most cases there will be found to be a slight mitral stenosis coexisting, which, in a measure at all events, tends to compensate the insufficiency. During systole the blood finds its way into the left auricle through the insufficient valve, the leak detracting from the amount which the ventricular systole should have expelled into the aorta. We thus see that, on the one hand, the aorta and the general circulation receives too little blood, whereas the left auricle receives too much, as it is now supplied by the left ventricle in addition to its normal supply from the pulmonary veins. This increased supply rapidly sets on foot hypertrophic changes in the auricular wall, which almost as rapidly gives way to dilatation. Synchronous with the hypertrophy is to be noted a rise in tension, starting in the auricle and being propagated into the pulmonary veins, which will give evidence of increased nutrition in the hypertrophic condition of their walls, with here and there foci of fatty degeneration. The increased tension does not, however, stop at the veins, but extends into the capillaries of the pulmonary artery and on into the right ventricle, then the auricle, and eventually into the entire venous system. A moment's reflection will show us that this general reversal of pressure will produce diminished tension in the aorta and increased tension in the venous system. Hence will we find, in cases of mitral insufficiency permitting regurgitation which has been of any duration, that the tension is highest in the pulmonary veins and venæ cavæ, and at its minimum in the aorta.

The chambers of the heart become speedily deranged, some by dilatation and others by hypertrophy, or by a combination of both. The left ventricle is usually found in a condition of hypertrophy, as it receives the blood under high pressure from the pulmonary veins, and furthermore, it performs all its functions under high pressure also. The left auricle will usually, in fact always, be dilated; the right ventricle hypertrophied.

The early alteration in the cavities occurs without the individual's knowledge; it is only when the compensation is deranged and the cardiac equilibrium is interfered with that the patient becomes aware of any discomfort. This change in the cardiac action is usually due to alteration in the myocardium, allowing dilatation; should the pericardium be adherent, this dilatation the more speedily arises. Now it is that palpitation arises, owing to the dilated chambers endeavoring to expel their unduly large contents, more noticeable, of course, during active exercise, when the circulatory apparatus receives undue stimulation. Shortness of breath will also become an exacting symptom, as the system at large demands increased oxygen, which even the rapid breathing is unable to supply; local or general dropsy is apt to arise, and, when occurring in the serous cavities, constitutes a grave element in the prognosis. Dry cough, in many cases due to the congestion of the bronchial vessels, will to the patient be the sole symptom that leads him to consult medical aid, and then the condition of the mitral valve is revealed. By this time the alteration in the chambers has so far progressed that the cardiac impulse will be seen and felt lower down than usual, even as low as the sixth or seventh interspace and outwards to the axillary line, or, as we have noted it, in the axilla. Inspection will also reveal marked undulations, even as far to the right as the epigastrium; a purring sensation, the purring tremor of Laennec, will be recognized by placing the hand over the præcordia, synchronous with the systole. Percussion will show a greatly increased area of dulness, which will still, however, maintain the shape of an irregular triangle, to which we called attention earlier in our study.

The degree to which the chambers in cases of mitral disease may undergo dilated hypertrophy and thus alter the percussion outline is well illustrated by the accompanying copy of a photograph of a child under the care of Dr. Hare,* whose history is as follows:

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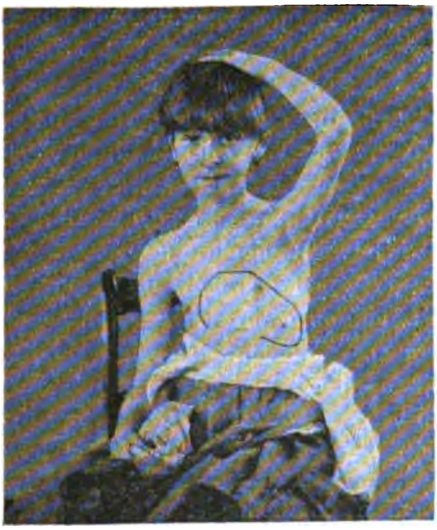
* We are indebted to Dr. Hare for permission to publish this case.

Lizzie D., æt. twelve, presented herself at the Children's Dispensary of the University of Pennsylvania.



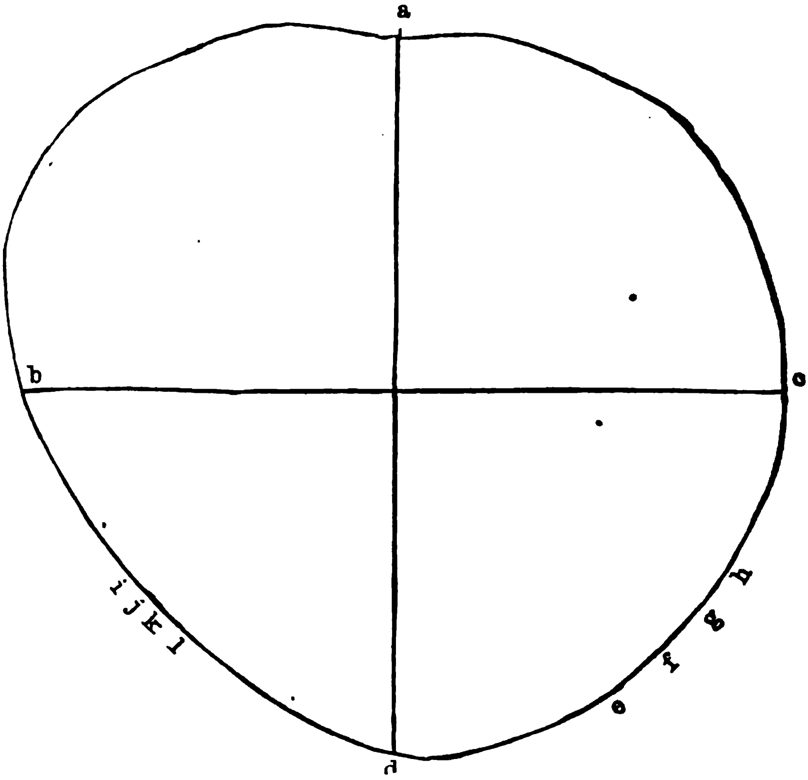
+ Mark shows point of main apex-beat; the broken line indicates approximation of cardiac and hepatic dulness.

Auscultation.—Over the præcordia a loud, rasping, machinery-like sound was heard, which was almost constant, as the heart was acting with great rapidity (150 per minute). By careful auscultation the abnormal sounds were resolved into a predominately presystolic mitral murmur, followed by a soft, purring, systolic bruit at the same valve. No aortic disease could be discovered; both sounds are heard with distinctness at the ensiform cartilage, and at the pulmonary area the second sound is markedly accentuated. The mitral murmur has a wide distribution, is just heard immediately to the left of the sternum in the second and third interspaces, increasing in intensity as the apex is approached and passed and carried on to the angle of the left scapula.

There is no arterial pulsation visible at the wrist.

Cardiac dulness began an inch to the right of the sternum, and extended to the eighth interspace at the posterior axillary line. The distance from the nipple to the extreme left point of dulness was three and a half inches. The greatest area of dulness from right to left was eight inches. These points are indicated by the iodine line on the skin seen in the photograph.

Palpation reveals a thrill and apex-beat in the sixth, seventh, and eighth interspaces, the maximum intensity being in the sixth and seventh.



a, Spinous process of vertebræ. *b*, Extreme right of chest. *c*, Extreme left of chest. *d*, Sternum. *e*, *f*, *g*, *h*, Abnormal anterior body of chest. *i*, *j*, *k*, *l*, Normal anterior body of chest.

The bony chest-encasement, in cases of extreme increase in cardiac volume, will, in the young, be much altered, as may be appreciated by noting the chest tracing taken from the above case with a lead-tape.

The child presented but few, if any, symptoms of cardiac disease, except the physical; there was no dropsy or other concomitant, except shortness of breath, for which symptom she sought medical advice. She and her friends can recollect no attack of acute disease, and state that the child has hardly been sick a day in her life.

(To be continued.)

PEDIATRICAL NOTES FROM LONDON.

BY E. S. McKEE, M.D.,
Cincinnati, Ohio.

Your correspondent sends a few notes from the Hospital for Sick Children, Great Ormond Street, London, thinking they may be of interest and profit to the readers of the Archives of Pediatrics.

This hospital is the oldest special hospital for children in London, and, I understand, in the world. It was founded by Dr. Charles West in the year 1858. It started out in quite a modest fashion in two old dwelling-houses, but has grown, until it now treats annually fifteen thousand sick children. The greater number of these are out-patients. The staff proper consists of fifteen physicians and surgeons, besides consultants, and house surgeons and physicians. They are chosen from the various hospitals of London, and are an able body of men.

The array of cases is somewhat monotonous in the general run, but among such numbers there are necessarily many intensely interesting.

It is wonderful what numbers of children are brought here suffering from chronic suppuration. Hip-disease, psoas abscess, caries of the spine, inflammation of the joints, and the general manifestations of scrofula are present with fearful frequency. Skin-diseases and troubles arising from mal-nutrition and bad hygienic surroundings form the great majority of the out-patient cases.

Hare-lip is a malformation which demands much time and consideration. The operation has been so often performed that the acquired experience proves of great value to the operators. One of the most successful operators in London is

Mr. Thomas Smith, surgeon to St. Bartholomew's Hospital. Mr. Smith is now consulting surgeon to the Hospital for Sick Children, but was on the active staff in 1861, when your correspondent was serving as clinical assistant there. It was then my privilege to see him perform this operation a number of times.

By way of a slight digression, Mr. Lawson Tait, before a recent meeting of the British Gynæcological Society, in a paper on his method of flap splitting with the flange suture in vesico-vaginal fistula and perineal operations, said he would recommend its trial also in cleft palate.

Mr. Howard Marsh, surgeon to the hospital, has made several operations in the last few weeks for cleft palate. His results were very good in all cases but one, in which the child coughed considerably after the operation, and the flaps failed to unite in the soft palate, although doing so in the hard. He thought the soft palate would heal to a great extent by granulations. Mr. Marsh does not recommend operating for cleft palate before the child has reached four or five years.

He warned his listeners not to go too far back with the operating knife, as there is danger of wounding the posterior palatine artery. If the artery is cut, it retracts up the canal and there is no chance to get at it to ligate or use pressure. He had this to occur in two patients under his care in St. Bartholomew's; one of them bled very much and long. He finally stopped it by finding the posterior palatine canal, and pushing up into it a match wrapped with cotton. This was also done in the other case, but the plug coming out the nurses could not return it, and the patient bled to death. The opening of the canal can be found just by the last molar.

The so-called partial excision of the hip-joint, opening the bone and scraping it, is in favor at the Great Ormond Street Hospital.

A great number of cases are received with strong symptoms of stone in the bladder,—frequent micturition, restlessness, pus and mucus in the urine, possibly stoppage of the urine,—yet no stone is there. This condition is found to be caused by scrofulous inflammation of the bladder, a condition which often leads to errors in diagnosis.

Excision is not practised so much as six years ago. In fact, the opinion of the staff is "dead against the operation," and it is only resorted to in extreme cases which are beyond hope when brought in. Only one excision of the hip-joint has been made in the hospital during the past year, and but three the preceding year.

Mr. John H. Morgan, of the surgical staff, recently operated on a little mite of a child, aged sixteen months, for stone. He made supra-pubic lithotomy, leaving the incision in the bladder unsutured, and suturing the external wound except at its lower extremity, where he kept a catheter for the first twenty-four hours. The result was all that could be desired. The stone was uric acid crusted with phosphates, and weighed fifty-three grains.

An interesting case of extroversion of the bladder is now in the ward of Mr. Edward Owen. This little girl, aged eight years, has an absence of the umbilicus, the symphysis pubis, the abdominal wall between them, the anterior wall of the bladder, and, to some extent, the anterior wall of the uterus. The posterior wall of the bladder presented and was caused to protrude, especially during the erect posture, by pressure from the intestines. She is surely "fearfully and wonderfully made." The ureters were exposed, and when Mr. Owen would make his visits, accompanied by fifteen or twenty medical men, the nervous excitement would cause the ureters to pump forth urine in little jets. On making his visits quietly and alone this was not noticed.. The malformation is very rare in girls, though more frequent in boys. Two plastic operations have been made to see if the opening can be closed. Partial success has been attained, as much as could be hoped. Mr. Owen thinks a little later he may attempt to do some more. The object is to get the bladder covered with skin, or the girl in such condition that she can wear an instrument to collect the urine as it runs away.

Among the hosts of children treated in the hospital, only two fatal cases have occurred during its existence from the use of chloroform. These, as is frequently the case, happened in trivial operations. The small fatality goes to prove the impunity with which it may be used with children.

tumor, the size of a fist, hung out of the mouth and over the chin, resting its base on the sternum. The pedicle could be followed up the right side of the septum, and appeared to end in the interior of the nose. It was ligatured high up and found that the pedicle entered the skull immediately in front of the sella turcica, and was attached to an oval tumor which was covered by a thin membrane and surrounded by the brain. The tumor consisted of gray brain-substance. The lateral ventricles were much dilated, and malformation of the heart was present.

The lecturer concluded by relating a few anomalous cases, any of which may be regarded as of unusual occurrence, and some as presenting difficulty of diagnosis. The first case was that of a child born of healthy parents. This, the third, was born healthy but small, and no instruments were used though the labor was tedious. At birth there was noticed above the anterior fontanelle a round soft swelling, red on surface. This had not increased when the patient was brought to the hospital. There was found in the above position a soft, smooth, fluctuating swelling, raised about one-half inch above the surface, and having a transverse diameter of an inch. It freely moved on the surface of the fontanelle, and there was a slight evidence of craniotabes. It had no sores about the body, and there was no indication in the child's cry of syphilitic affection of the larynx. Still there was an impression, probably from the prevailing views on the subject of craniotabes, that the swelling might have a syphilitic origin, and the patient was placed on a course of gray powder. At first the tumor did not diminish, but the craniotabes became more marked. In the course of three months, however, this had disappeared, though the tumor had altered but little, and indeed had not decreased in size at the end of six months, when the case was lost sight of.

This was probably an instance in which the communication with the external sac became obliterated, looking to its congenital origin, its situation, and the presence of craniotabes which are always found in these cases.

The next case was a boy of four years, brought here on account of a lateral curvature. He was a healthy-looking lad of sound parentage. Attention being called to his head, a pulsating swelling was found, about three-fourths inch in diameter, at the prominence of the occipital bone. This could be easily emptied by pressure, but was felt to pulsate synchronously with the pulse in the posterior auricular artery. The pulsation was feeble and controllable. There was no source of communication with the interior of the skull. This was believed to be a case of aneurismal varix, or a congenital dilatation of one of the larger arteries of the skull.

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Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Soltman: The Characteristic Play of the Features and Movements of the Limbs in Sick Children. (*Jahrb. f. K.*, xxvi. 2.)

While there must of necessity be other influential elements in the diagnosis of the diseases of children, the difficulties of examination are so much greater, in many respects, than they are in adults, that advantage should always be taken of the play of the facial features and the movements of the limbs. This means as well attention to anatomical details as their *tout ensemble.* As soon as a disease attacks a child the countenance assumes a much more expressive character than it has in health, the body assumes an unwonted position, and the limbs become either unnaturally active or unnaturally quiet. Attention to these peculiarities (and any peculiarities of the thorax and abdomen as well) must, of course, be supplemented if possible by other means, but not infrequently these are all which are available.

Children suffering with pneumonia usually lie upon the back; those with pleurisy upon the affected side; those with peritonitis also lie immovable upon the back, and the slightest jarring of their surroundings is an evident cause of pain. The countenance of children with peritonitis has a painful, *drawn* expression, and their breathing is quick and shallow. In croup the changes of countenance are due to stenosis of the larynx with consequent want of air and disturbance of the circulation, the severer the disease the more intense being the expression of anxiety. They are constantly moving about, the face being red and bathed in perspiration, the eyes and mouth wide open, and the muscles of respiration fixed and tense. The countenance of a child suffering from retropharyngeal abscess resembles that in croup, especially in the evident desire for air, but the head remains stiff, and thrown backward, the submaxillary and supra-clavicular regions are filled out, and food and drink, if taken, are regurgitated. The expression in diseases of the heart resembles that in diseases of the throat and lungs, but the course of the former being usually more chronic, the anxious character of it assumes a fixed and immovable character. In the acute inflammatory diseases of the brain the countenance is peculiarly expressive. The size and shape of the cranium, the shape and condition of the fontanelles and sutures, have an indirect bearing in forming the diagnosis of brain and meningeal troubles, especially in chronic hydrocephalus. In simple and tubercular meningitis there is a fixed expression as of deep thought which is quite characteristic. In simple meningitis the head is thrown backward, the eyes glitter, the pupils are contracted, there are furrows in the middle of the brow, the light is avoided, the masseters are contracted, and the mouth is firmly closed, upon the skin there are red spots, and the fists are clinched. As exudation takes place into the brain, there are paralyses, the visual axes diverge, the eyes have a vacant stare, and consciousness disappears. A similar expression is seen in basilar meningitis, but the various changes come on gradually. In simple meningitis, also, the skin is pale, the body emaciates, respiration becomes slow, irregular, and deep, and occasionally a sigh is heaved. When the optic chiasm is pressed upon the eyes are rotated upward, the head is thrown backward, and the countenance expresses astonishment. The child lies on his back with his arms crossed over his head, or with his hands plucking at his hair and lips. The face is red or violent, and there is the so-called projectile or cerebral vomiting. As the exudation increases there are convulsions, squinting, ptosis, trembling at the angle of the mouth, and finally general paralysis, with a tired vacant expression, a bounding pulse, rapid respiration, and death. In trismus and tetanus, among the preliminary symptoms is an expression of weariness and anxiety. In chronic dyspepsia, intestinal catarrh, and enteritis the facial expression is that of disgust, loathing, and aversion, as if there were a bad taste in the mouth. As the child becomes weak from the excessive discharges, the face has a spectral appearance, the nose pointed, the lips thin, the eyes sunken, covered with thin mucus, and surrounded by blue lines. In chronic intestinal catarrh and follicular enteritis the face is emaciated, the skin being gray, with no perceptible demarcation from the mucous membrane, and hanging in folds. The cranial bones seem to sink inward, the eyes are sunken with fold radiating from the external angles, the mouth gapes widely, and the cheeks are hollow. In addition to the foregoing, peculiarities might also be mentioned in connection with infectious diseases and such constitutional disorders as rachitis, scrofula, tuberculosis, hereditary syphilis, etc. A. F. C.

D'Orrenburg: The Treatment of Infectious Diseases. (*Centr. f. Kinderh.*, May 2, 1887.)

Proceeding upon the assumption that infectious diseases are usually due to an invasion of organisms which are foreign to the body, the author discusses the methods of such invasion, and the possible avenues of entrance, offering the following propositions with reference to their treatment:

1. Continuance of the infecting process should be guarded against by destruction of the infecting germs upon every accessible portion of the surface of the body, and by rapid evacuation and disinfection of the intestine.
2. An attempt should be made to dispose of such excitants to disease (or their ptomaines) as have already penetrated the body by increasing the discharge from the intestines, kidneys, and respiratory organs.
3. The resisting power of the body should be increased, through its organs, by abundant nutrition, reduction of temperature by means of hydropathic treatment, and other suitable antipyretic agents and irritants. Among the latter electricity may prove to be an efficient agent.

For accomplishing the thorough disinfection of the intestines, the use of calomel and bismuth may be found an effective combination. If diarrhœa is present, five centigrammes of subnitrate of bismuth and half as much calomel may be given, in pill form, while the dose may be one-third or one-fifth the quantity in case of constipation. In the treatment of typhoid fever before the third day of its development the author has found great benefit from the use of rather large doses of calomel sufficient to produce copious evacuations. If the case is not one of great severity, this treatment could be continued until the end of the first week. This will convert the disease into its mild form, and exert a favorable influence upon those phenomena which are especially referable to the intestines. The effect of the calomel in these cases may be intensified by the addition of a suitable quantity of senna. To be more explicit as to the treatment of typhoid fever, the bowels should first be thoroughly evacuated with castor oil, nine to twelve pills should be given daily, each containing five centigrammes of bismuth subnitrate and twenty-five milligrammes of calomel, and sufficient infusion of senna should be added so that the patient may have six to eight movements in the course of twenty-four hours. Calomel is also recommended for the treatment of dysentery, and in four of the author's cases the bleeding and fever ceased on the second day after this treatment was begun. In cholera laxative doses of calomel should also be given, and albuminoid nutriment, for example, milk, should be used as far as possible, which will favor the conversion of the calomel into corrosive sublimate; this treatment may be continued until the vomiting has been allayed. Saline solution may be used either subcutaneously or by injection into the peritoneal cavity, irritants such as strychnia and arsenious acid, and for general stimulation hydrotherapy. In diphtheria, in addition to the primary disinfection of the intestines the author uses sufficient quantities of the cyanide of mercury to produce salivation and irritation of those portions of the mucous membrane which are involved. Locally, he recommends simply the frequent gargling of the throat with lukewarm water to prevent, as far as possible, the swallowing of purulent matter. In scarlet fever the object, after the disease has once announced itself, is to prevent the microbes circulating in the blood from establishing themselves upon the skin, whence they would accomplish a further infection of the organism. Iodide of potash is used to accomplish this purpose, in doses of one to three centigrammmes according to the age. The results of this plan were favorable, the duration of the eruption being shortened. In nineteen of the author's cases which were thus treated there were no renal complications. In five other cases in which scarlatina was suspected this treatment was adopted, and no eruption appeared; there was, however, a subsequent scaling away of the skin. A. F. C.

Freund: Animal Vaccination with Reference to its Technical Development; also the Antiseptics of Vaccination. (*Centr. f. Kinderh.*, March 19, 1887.)

Retrovaccination of animals is recommended as the result of the author's long experience,—that is, the inoculation of calves with fresh lymph obtained from children. The following scheme for antiseptical inoculation is proposed:

I. Human vaccination.

1. Preliminary precautions: Exclusion of children who are about to be vaccinated from infected places; disinfection of the vaccinator, his instruments, and the part to be vaccinated.

2. Antiseptics of the vaccination itself.
    - *a.* Cleanliness of the child and his clothing; disinfection of the lymph and the field of inoculation by the application of an ethereal or alcoholic solution of sublimate (one to five thousand) just before inoculation.
    - *b.* A daily bath until the fifth or sixth day after inoculation, suitable clothing, careful nursing. If the operation is performed during the first few weeks of life, the wound should be carefully examined on the fifth or sixth day, and covered with sublimate or iodoform collodion (one to one thousand).
    - *c.* Before the lymph from the pustules is removed the latter should receive an application of ethereal or alcoholic solution of sublimate (one to five thousand); the lymph should be washed in pure ether or alcohol, and carefully collected and kept. After removal of the lymph, the parts should be covered with sublimate or iodoform collodion.

II. Animal vaccination.
- *a.* Cleanliness.
- *b.* After pustulation, careful washing of the pustules and removal of crusts, and thorough disinfection of everything which is to be used for collecting and keeping the lymph.

The chief advantage to be derived from all these precautions seems to be that the vaccinia will, as a result, run a much milder course. A. F. C.

Miller: Antiseptic Treatment for New-Born Infants. (*Centr. f. Kinderh.*, May 2, 1887.)

In the author's experience in the foundling asylum at Moscow new-born infants have been very susceptible to septicæmia and pyæmia, from seven to eight hundred deaths occurring among them yearly, at that hospital, from pyæmia. He divides his cases into three groups: (1) Those cases in which the disease occurs during the first three days of life, in which the navel-string is still unchanged or only slightly changed. In such cases it is assumed that infection must have occurred during intra-uterine life. Autopsies reveal only the so-called *dissolution of the blood* without noticeable disease of the organs. (2) In these cases pyæmia sets in on the fourth or fifth day of life coincidently with the fall of the navel-string. Autopsies show accumulations of pus, with fatty degeneration of the organs, inflammation of the peritoneum and pleuræ, and ulcerative endocarditis. Infection in such cases proceeds from the navel. (3) In these cases pyæmia comes on at a later period, and the cause must be sought in the unfavorable surroundings of the hospital or asylum. The disease is frequently a complication in different inflammatory processes. Autopsies in such cases may show that the navel is healthy, the only perceptible lesions being stomatitis, or possibly intertrigo and rhagades about the anus in consequence of diarrhœa. In children who suffer with blennorrhœa neonatorum an inflammatory condition of the navel is not infrequently found which should receive careful attention. Runge's method of treating the stump of the navel-string is recommended, and consists in drying it, sprinkling it with boracic acid, and wrapping it in salicylated cotton. Should there be suppuration, applications of carbolic acid solution and iodoform may be used. Should stomatitis or rhagades at the anus develop, they should be carefully treated on antiseptic principles.

A. F. C.

Lecuyer: Can Peripneumonia be transmitted, by Means of the Milk of Cows suffering from this Disease, to Human Beings? (*Centr. f. Kinderh.*, May 16, 1887.)

A series of investigations has led to the conclusion that the unboiled milk of cows suffering from lung-disease is liable to produce croupous pneumonia in human beings, the anatomical appearance of which is like that which occurs in cattle. The autopsies upon two children who had died under similar circumstances, and with clinical phenomena similar to those which are seen in lung-disease in cattle, showed thickening of the pleuræ, extensive adhesion of the costal to the pulmonary pleura, dilatation of the lymph-space extending from the subpleural to the interlobular connective tissue, and infiltration of the interlobular connective tissue with bloody serum. At the time when the two children were taken sick an epidemic of lung-disease was prevailing among the cattle in their vicinity. This coincidence is important, and should excite pathological investigation in this direction. A. F. C.

Hutchinson: Notching of the Incisor Teeth not of Syphilitic Origin. (*Brit. Med. Jour.*, May 28, 1887.)

There is a notching of the upper incisor teeth affecting the two permanent central ones of the second set not due to syphilis, but which may be confused with the notching of that disease.

The points of distinction are that the non-syphilitic tooth is wide instead of narrow at its free edge, and it is hard and craggy, while that from syphilis is pointed, like a screw-driver, and worn down. A case is mentioned where such notched teeth were hereditary in a family; the defects occurred in pairs and did not damage the whole row. There existed no evidence of mercurial poisoning, nor were the first permanent molars, the test teeth of the mercurial set, affected.

The writer thinks it beyond question that such teeth may come from inheritance. He was once shown such teeth in a Paris hospital, and great surprise was expressed that he did not consider them characteristically syphilitic.

II.—MEDICINE.

Laffitte: Three Cases of Syphilitic Pseudo-Paralysis Cured. (*Rev. Mens. des Mal. de l'Enf.*, May, 1887.)

In new-born and very young infants a condition of apparent paralysis of the limbs is sometimes seen, which is caused by changes in the bones, resulting from hereditary syphilis. This condition was first correctly described by Parrot in 1872, though cases had previously been seen by Valleix, Guéniot, Bednar, and Henoch. All of these writers recognized the syphilitic origin of the condition, but they all erred in considering the paralysis as genuine. They attributed it directly to a specific inflammation of the nervous centres, and, not suspecting that the lesions of the bones were its sole cause, they considered the lesions and the paralysis as two different results of the same syphilitic infection. Wegner's investigations concerning the pathological anatomy of this condition were published about the same time as Parrot's memoir, but he overlooked certain common forms of the disease, evidently writing from a purely anatomical rather than a clinical stand-point. To Parrot, therefore, is due the credit of referring the paralysis to the osseous lesions. These lesions appertain chiefly to the epiphyseal extremity of the long bones, and cause a separation of the epiphyseal cartilage from the bone, the separation occurring upon the bony epiphysis near the line of union of cartilage and bone. The rubbing of the fragments against each other causes irritation and suppuration, and the process may extend to the periosteum and the peri-articular muscles. Only in very rare cases is the cavity of the joint penetrated. Should the muscles remain uninvolved, as well as the joints and the nervous centres, the breaking of the bony levers and the great pain which is caused by motion are, according to Parrot, the only causes for the complete impotence of the limbs which is so characteristic of pseudo-paralysis. In some cases this condition exists, though the periosteum may be intact, and may hold the fragments of the epiphysis in correct apposition. As to the symptoms of this condition, there is no disturbance of sensibility, the muscles remain flaccid, and do not lose their electrical contractility. The two upper limbs are most frequently involved, the hands being pronated, and the fingers semi-flexed. Should the lower limbs be attacked, they would seem to be dislocated on grasping the child under the axillæ and raising him. Should the affected part be pinched, the pain is severe and the entire frame becomes agitated, with the exception of the limb which was touched, this remaining immovable or nearly so. Palpation of the affected part will reveal swelling of the joint, and sometimes slight bony crepitation may be detected. There is no fever, and the beginning of the disease is unobserved. Both limbs are usually involved, either simultaneously or one after the other, and eventually the other set of extremities may also be attacked. Hemiplegia and other mixed forms of paralysis occur but rarely. The muscles of the face, neck, and back are never involved. In many cases there are evidences of syphilis upon the skin, the lips, in the mouth, and around the anus. Upon the head there may be occipital and parietal alopecia. Death occurs not infrequently between the fourth and the twenty-fifth days from athrepsia. Recovery may occur in five weeks to two months, but with Parrot all cases were fatal. Three successful cases are narrated by the author, a cure resulting in fifteen, thirty, and fifty-five days respectively. The prognosis depends greatly upon the general condition of the patient, children who are well nourished and well cared for having the best chances of recovery. In making the diagnosis, either there are cutaneous and mucous evidences of syphilis or there is an absence of these. In the former case the pseudoparalysis is always to be referred to syphilis, and not to any cerebro-spinal lesion. The absence of contractures, the complete resolution of the paralyzed or apparently paralyzed muscles, the integrity of the muscles of the trunk, the neck, and the face, all demonstrate the latter fact, as well as the epiphyseal swelling and the progress of the disease. If there is no external syphilide the diagnosis is more difficult, and one must consider a surgical and a paralytic variety; surgical if there is any evidence of injury or of arthritis, the condition being limited to the member first involved, and paralytic when there is no evidence of traumatism, and the paralysis to another or to other members. In differentiating from atrophic paralysis, it is to be remembered that the latter occurs at a later period of childhood than the former; it begins with fever, and does not extend beyond the muscles which are first involved. It is not accompanied with pain or epiphyseal swelling. The muscles do not respond to electricity after the first week, nor subsequently, at all, in those which become atrophied. For the treatment of syphilitic pseudo-paralysis, the author recommends Van Sweten's solution or Gibert's syrup (French Codex) and sublimate baths. The child should be nourished at the breast, and should have pure air, and good hygiene in general. The specific treatment should be continued during several years, especially during the spring and fall.

A. F. C.

W. Pasteur: Paralysis of the Diaphragm after Diphtheria, with Extensive Pulmonary Collapse. (*Lancet,* May 14, 1887.)

The paralysis seemed very clearly of diphtheritic origin, although the throat symptoms were so mild as almost to escape notice. The patient, a boy of five years, began five or six weeks afterwards to decline in health, and to exhibit signs of weakness in the lower extremities and then in the larynx. The usual signs of diphtheritic paralysis, loss of knee-jerk, nasal voice, difficulty in swallowing, etc., were present.

Two weeks after the first symptoms of paralysis the loss of power in the legs was complete. Plantar reflex was a little delayed, and cutaneous sensibility in the lower extremities was blunted. Nourishment was taken with difficulty during the next few days. Loss of power in the arms and muscles of the trunk gradually increased. The ribs moved less and less every day. The voice was reduced to a whisper, and the cough was very feeble. It was not possible to administer sufficient food by mouth, and nutrient enemata were given.

At the beginning of the fourth week the respiration became much embarrassed, and signs of cyanosis appeared. The right chest was immovable except the two or three upper ribs. Two days later the diaphragm had almost ceased, and the signs of broncho-pneumonia at the apex and of pulmonary collapse at the base of the right lung were made out. The temperature rose to 102.4°, and the pulse to 144. This condition, which seemed hopeless, lasted for over two days, the patient being kept alive by the free use of brandy and ether hypodermically.

Improvement from this time was rapid. In a month he could walk with assistance, and in two months he was discharged cured. The knee-jerk, however, was absent for several weeks longer.

Strychnia was given, but does not seem to have influenced it materially, as the patient grew steadily worse under its use for the first ten days. The pulmonary signs of pneumonia and collapse, the author thinks, might have had their origin in the leakage of fluids into the air-passages, which the cough was powerless to expel, possibly in some disturbance of the right vagus also.

Farago: Acute Nasal Catarrh in New-Born Infants. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], May, 1887.)

This morbid condition usually begins suddenly and with a marked rise in the temperature. For two or three days the temperature may continue at 39° to 40° C. Dyspnœa may also be present, with frequent and superficial respiration, the inspirations sometimes numbering sixty per minute. The mucous membrane of the nose becomes injected and swollen, especially in the region of the middle turbinated bone. On the third or fourth day the secretion becomes more viscid, the respiration more natural, and frequently the temperature drops with the characteristics of a crisis. Acute catarrh is distinguishable from syphilitic coryza by the temperature phenomena, no febrile symptoms being present in the latter. The swelling of the nasal mucous membrane with its attendant dyspnœa may be treated with local applications of a two-per-cent. solution of muriate of cocaine, and injections of a one-half or one-per-cent. solution of common salt, made with great care, may be used to remove the accumulations of mucus in the nostrils. The use of the more active astringents, such as nitrate of silver or tannic acid, might be followed by intense inflammation of the middle ear. A. F. C.

Mumps and Peripheral Neuritis. (*Lancet*, April 9, 1887.)

On the authority of M. Joffroy, mumps may be added to the list of general diseases with which peripheral neuritis is sometimes associated.

The paralysis occurring in Joffroy's case affected all four extremities. The legs as usual were first affected, lancinating pains preceding the paralysis. The deep reflexes were abolished. The muscles gave the reaction of degeneration when tested with both currents. Hyperæsthesia of the muscles seemed to be present, as pressure was painful.

The paralysis came on three weeks after the attack of mumps, and lasted four months.

Barthel and Moritz (St. Petersburg): Treatment of Croupous Pneumonia by Means of Inunctions of Gray Ointment. (*Arch. f. K.* [abstracted], viii. 4.)

The mercurial treatment of pneumonia was recommended as early as 1850 by Wittich. The author at first used this method in hospital practice, and was not pleased with its results, the internal use of sublimate producing great disturbance in the gastro-intestinal tract. For the past ten years he has practised the inunction method, at first in old people. The results were so satisfactory that he extended the treatment to children, and since 1883 he has used the gray ointment by inunction in all cases of pneumonia, whether occurring in old or young. Between the years 1880 and 1884 640 cases of croupous pneumonia were seen in the large hospital at St. Petersburg under the care of the authors; of these, 440 recovered and 200 (31 per cent.) died. Of the entire number 101 received the inunction treatment; 73 of these recovered and 28 died. In the years 1883 and 1884 32 patients with this disease were treated in the authors' wards with only 2 deaths; in the other wards of the hospital 188 cases were treated, during the same period, by other methods of treatment than the one which is described in the authors' paper, with 29 deaths. In other words, the mercurial treatment during the given period resulted in a mortality of 6.2 per cent., other methods of treatment in a mortality of 31.4 per cent. The 32 cases were received into the hospital between the second and ninth days of the disease. In 24 of them only a single lobe was affected; in 2 there was double pneumonia. In 26 cases there was a perceptible crisis, which occurred most frequently upon the seventh day; its earliest appearance was on the fifth day, its latest on the twelfth. Of the 6 cases which did not end by crisis, 2 ended fatally, and in 2 the patients were discharged with the apices still involved. The inunctions were practised as soon as the diagnosis was made, the extremities, the abdomen, and the sacrum being the seat of the applications; applications of other kinds were made to the chest. The quantity used was four grammes, morning and evening, and in the severest cases six grammes. A mouthwash of chlorate of potash solution was used from the beginning of the treatment, but in spite of this the gums and the salivary glands became slightly inflamed in some cases. The inunctions were continued, as a rule, only half a day after the crisis occurred. In addition to the administration of mercury, other suitable agents were given as occasion demanded.

A. F. C.

Péronne: Pathological Physiology of Cholera. (*Jour. de Méd. de Paris,* May 22, 1887.)

The author's studies have suggested the following theory: The choleraic miasm, by acting directly upon the nerves of the gastro-intestinal glands, causes a rapid and intense circulation, which results in the abdominal symptoms,—namely, vomiting, purging, epigastric pain; and these by reflex action upon the vaso-motor system result in spasm and obstruction of the arteries and capillaries in the region which is involved; the phenomena of algidity follow. In support of the foregoing is the congestion which one finds *post mortem* in the gastro-intestinal and mesenteric vessels, and the relative emptiness of the remainder of the circulatory apparatus. Such examinations also show that the intestinal hyperæmia is not of an inflammatory character. The choleraic discharges are not composed of blood-serum, and the influence of the secreting glands in producing them is the more evident when one remembers the work of secretion which takes place throughout the entire extent of the digestive tube. Increased secretion also causes a central rise of temperature in the algid stage when the temperature at the surface is subnormal, and this central temperature must, of course, vary with the conditions of hæmatosis and nutrition. Weakness of the pulse is caused by the contraction of the arteries, thickening of the blood, and diminution of its volume; but the vascular spasm is the most efficient agent, for, though the blood circulates difficultly at the surface of the body, it circulates very rapidly in the vessels of the stomach and intestines. Cyanosis is due to disordered hæmatosis, which in turn is caused by changes in the blood, in its temperature, and a slowing of the general circulation. The dyspnœa from which cholera patients suffer is due to the painful sensations caused by the penetration of the air to the base of the lungs, and to the failure or absence of revivification of the blood. The absorbent power of the capillaries of the skin and cellular tissue is seriously impaired, owing to the impaired circulation in those areas. Absorption by the mucous membrane of the stomach and intestines is difficult or impossible on account of the desquamation of the epithelium of the digestive tube, and the exaggerated functional activity of all the gastro-intestinal glands. The drying up of the secretions is due to arrest of the general circulation, and the chilling of the surface to suppression of the pulse and diminution in the force of the nutrient processes. The cramps, according to Brown-Séquard, are due to the circulation of venous blood in the arteries, and perhaps, also, to the weakness of the pulse. The *ante-mortem* high temperature is due to the relaxation of the vessels as death approaches, and the prolonged *post-mortem* high temperature at the surface follows the previous high temperature at the surface with the accumulation of blood in the viscera. A. F. C.

III.—SURGERY

Villar: Tumors of the Umbilicus. (*Lancet*, July 9, 1887.)

Villar, of Paris, has recently published a monograph upon this subject. He divides the benign growths into angioma lymphocele, granuloma, adenoma, sebaceous and dermoid cysts, fibro-papilloma, and myxoma.

Angioma is rare; a few cases of erectile tumors are on record, all being congenital.

Granuloma, or umbilical fungosity, is seen in new-born children, but is not congenital. It appears a few days after the cord falls off as a red fleshy mass, bleeding readily; it keeps up an irritating discharge, which produces eczema. It grows slowly for months. It should be removed by scissors or ligature. Cases of recurrence as late as the fourth year have been seen.

Adenoma is always congenital; in gross appearance it resembles granuloma, but histologically is made up of tissue closely resembling the mucous membrane of the stomach, and gastric juice containing pepsine has been secreted. Eleven such cases are recorded.

Sebaceous tumors and dermoid cysts are rare, and are not to be confounded with sebaceous secretions external to the epidermis.

Edmund Owen: Psoas Abscess, When and How to Evacuate it. (*Brit. Med. Jour.*, April 23, 1887.)

Spontaneous absorption is not to be looked for; sooner or later evacuation must take place by nature or art. The advantages of incision are that the cavity can be at once emptied, cleansed, and drained. The earlier this is done the better; delay causes extensive burrowing, and the formation of large suppurating intractable cavities.

The writer favors the anterior opening, with a counter-opening in the loin for purposes of thorough irrigation and free drainage. In small abscesses a single opening may suffice: this should be made behind.

Warm iodine-water is preferred as being safer, and quite as efficient as sublimate solutions for washing out. The most convenient after-dressings are bulky pads of wood-wool and gauze bags of finely-picked oakum; these should be fixed under a towel tightly pinned as a binder.

Pus sometimes collects rapidly upon the opposite side of the spine when a single abscess on the one side has been opened. If the temperature rise and remain high after the evacuation of a unilateral abscess, this should be watched for, and opened immediately when discovered. There is usually inter-communication between bilateral abscesses, and the area of suppuration cannot be kept aseptic until both sides are washed and drained.

Loxton: Meningocele obstructing Labor; Spina Bifida. (*Brit. Med. Jour.*, May 21, 1887.)

The woman was a primipara. The labor progressed naturally until the occiput was under the pubes, when, for some unknown cause, further advance was prevented. Delivery was completed by the forceps, and the explanation of the delay was found to be a meningocele the size of an orange, sessile, and covered by the tissues of the scalp. It occupied the site of the lambdoid suture, which it obliterated completely. In the lower dorsal region a spina bifida was found, this and the meningocele alternately enlarging and diminishing as pressure was made on one or the other. The child was otherwise well formed. It did not survive.

Robertson: Large Congenital Umbilical Hernia. (*Glasgow Med. Journal*, April, 1887.)

The child, a male, was naturally delivered, when a large tumor, the size of its head, projected at the umbilicus. It was covered with healthy peritoneum. Into this the funis seemed to be inserted, spreading out fan-like. The bowels moved freely, but the child vomited very much, and died when nine days old. The tumor contained what first looked like the stomach, but which was found to be the jejunum greatly dilated. The large intestine seemed to be absent. The ileum seemed to run on the right side straight down to the anus.

Programme of the Section on Diseases of Children of the Ninth International Medical Congress, to be held in Washington, D. C., September 5–9, 1887.

Rate of Growth in American and British Children and its Bearing on the Investigation of Diseases. By W. Stephenson, of Aberdeen, Scotland.

Scarlatinal Nephritis from a Clinical and Pathological Stand-point. By Henry Ashby, of Manchester, England.

Deleterious Results in Children of a Narrow Prepuce and Preputial Adhesions. By L. A. Sayre, of New York.

Pathology of Croup. By W. P. Northrup, of New York.

The Milk Supply of Cities. By Cyrus Edson, of Brooklyn.

The Use of Cow's Milk in the Feeding of Infants. By V. C. Vaughan, of the University of Michigan.

Some Observations on Headaches in Children and their Relation to Mental Training. By W. H. Day, of London, England.

Diseases of Faulty Habit. By J. F. Goodhart, of London, England.

Remarks on Tubage of the Glottis and the Manner in which it was Practised in France. By M. Bouchut, of Paris.

Intubation of the Larynx in Membranous Croup: its History, Exhibition of the Tubes, and Mode of Using Them. By J. O'Dwyer and Dillon Brown, of New York.

Intubation *versus* Tracheotomy in the Treatment of Croup. By F. E. Waxham, of Chicago.

Discussion of Intubation to be opened by J. J. Reid, of New York.

The Treatment of Diphtheria by the Use of Antiseptic Vapors. By M. L. Graucher, of Paris.

Cerebral Irritation in Infants. By M. Jules Simon, of Paris.

The Nature of Whooping-Cough and its Treatment by Antiseptics. By M. Moncorvo, of Rio de Janeiro, Brazil.

The Nutrition of Infants. By A. R. Leeds, of Hoboken, N. J.

Marasmus. By I. N. Love, of St. Louis.

The Hallucinations of Young Infants. By M. E. Bouchut, of Paris.

Some Obscure or Doubtful Points in the Clinical History of Pneumonia in Children. By M. A. D'Espine, of Geneva, Switzerland.

Hereditary Syphilis and Rickets in Brazil. By M. Moncorvo, of Rio de Janeiro, Brazil.

A Study of some of the Bacteria found in the Dejecta of Infants affected with the Summer Complaint. By W. D. Booker, of Baltimore.

Statistics of Diphtheria as it occurs in Rural Localities. By C. W. Earle, of Chicago.

The Contagium of Whooping-Cough. By A. Vogel, of Munich.

The Treatment of Strumous Glandular Enlargements of the Neck. By M. Oxley, of Liverpool, England.

Infantile Convulsions in Connection with After-Neurotic Tendencies. By J. A. Coutts, of London, England.

Malarial Affections in Children. By M. Moncorvo, of Rio de Janeiro, Brazil.

Concerning Acetonuria in Children. By Professor Adolph Baginsky, of Berlin.

The Treatment of Gastric Disorders in Infants from Over-Feeding. By M. E. Cadet de Gassicourt, of Paris.

Subsection of Orthopædic Surgery.

The Treatment of Lateral Curvature of the Spine. By James Knight, of New York.

Anchylosis of the Knee-Joint in a Straight Position by Excision as a Remedy for the Atrophy and Deformity following Acute Poliomyelitis of Childhood. By Stephen Smith, of New York.

Hip-Disease: Practical Points in its Treatment. By A. J. Steele, of St. Louis.

The Principles of Treatment of Club-Foot, partly demonstrated by the Exhibition of Apparatus. By Wm. E. Balkwell, of London, England.

Forcible Correction of Contracted Knee-Joint. By E. H. Bradford, of Boston.

The Progress of Orthopædic Surgery. By Noble Smith, of London, England.

Section of Contractured Tissues Essential before Mechanical Treatment can be Effectual. By L. A. Sayre, of New York.

The Scope and Limitations of Orthopædy. By C. Fayette Taylor, of New York.

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IS HIP-JOINT EXCISION A JUSTIFIABLE OPERATION?

BY FREDERICK CHURCHILL, M.B., F.R.C.S. ENG.

STRANGE indeed that such an inquiry should be capable of serious discussion without the certainty of being able to affirm that "the 'ayes' have it" by a large majority. We must not blink the fact that there are both believers and disbelievers in the permanent success of this operation. And yet in more senses than one it may be affirmed, without fear of contradiction, that the surgery of childhood centres at the hip-joint. Failure in the treatment of this most important joint involves so many children in a hopeless condition of permanent disability for earning their livelihood that it becomes essential to reconsider and discuss together the most expeditious methods of effectually combating this disease in the light of modern methods of research and treatment. Not only must we decide as to the most suitable stage of the disease when operative interference becomes desirable, but we must carefully consider the amount of local and constitutional disturbance. For example, how far is the local manifestation an outburst of a general tuberculosis or only the result of local damage to a joint predisposed to inflammatory mischief? Will the child's health suffer less from the expectant method of treatment with proper fixation apparatus and hygienic surroundings, or will the disease be aggravated and the constitution more deeply involved by the persistence of a destructive disease of a joint which is always more or less a source of deep anxiety, discomfort, and pain to the little sufferer? Is it desirable to favor the closure of the deep, pouch-like wound quickly after excision, or should it be kept distended, so that all the deep layers of fascia, the remnants of ulcerating cartilage, the capsule of the joint, and intermuscular septa may be carefully treated with antiseptic dressings?

I shall now endeavor to answer these questions in the light of past experience, hoping to arrive at some practical deductions for our guidance for the management of this too often intractable disease.

1. Let us first consider what is the most suitable stage for excising the joint successfully.

This is a crucial question which demands careful consideration. Very grave differences of opinion exist among surgeons as to early or late excision. Those who, like myself, advocate late excision,—*i.e.*, when there is evidence of the destruction of cartilage,—are exposed to the taunt that we put off "a necessary evil" as long as possible, and then rather half-heartedly excise the joint with a vague hope that we may save both life and limb. When the destruction of joint has made considerable progress, no wonder that it becomes almost impossible to treat the disease successfully. I am not surprised that many eminent surgeons draw back and say, rather than have such disappointing results, "I will abstain from operative interference altogether." My friend Mr. Howard Marsh, whose opinion I value highly, appears to have come to the conclusion that he gets better results by the expectant treatment. In a recent review of his book on "Diseases of the Joints" in the leading medical journal of Great Britain,—viz., *The British Medical Journal*,—the writer, after expressing agreement with the do-nothing treatment, highly approves of such passivity. He summarizes the method of treatment as follows: "Patience and a trust in the curative powers of nature, with such help as perfect rest and the evacuation of sequestra and pus, are preferred to the unseasonable interference which excision involves." Unseasonable interference to boot! A man who can calmly sit down with pen in hand and talk about excision of an important joint like that of the hip being "unseasonable interference" must indeed be "a paper knight," and one who can have had but little experience in the treatment of this destructive disease. I do not doubt myself that many surgeons with large experience of the surgery of childhood will not hesitate to excise the joint in properly-selected cases.

Because we have to face difficulties and disappointments which are inseparable from this and many other operations should only encourage us to more determined perseverance to combat these difficulties successfully, rather than give up in despair. So far from joining in the strange panic of *sauve qui peut* in regard to the treatment of this disease, I venture to challenge investigation of the permanent results of my excision cases as being not only satisfactory, but encouraging. I have no doubt that many hospital surgeons can show even better results and riper experience in their hip excisions. I have already stated my opinion that excision is not to be entertained until we have distinct evidence of disorganization of the joint, or what may be termed the third stage of the disease. I do not agree with many that we must wait till we have evidence of grating between the rough end of the femur and the acetabulum before concluding that we have arrived at this stage. Grating is, of course, a valuable evidence of destruction of cartilage when we can get it, but there are so many causes which prevent the rubbing together of these bones when the disease is far advanced, and just because the disease is far advanced, that we cannot rely upon this as an infallible guide. We may have almost complete absorption of head and neck by a rapid disintegration of the cartilage-cells and by rarefying ostitis of the subjacent bone, so that the great trochanter, well covered with fibrous tissue, rests against or above the rim of the acetabulum. Any attempt to revolve what remains of the head in the cup of the acetabulum may fail to produce a grating sensation, the bony surfaces not being in contact. Or again, the fibrous band of inflammatory adhesion and nature's efforts at repair by the deposit of osteophitic growths around the joint may interfere with and altogether mask the real amount of disease within the capsule. The synovial membrane, too, in consequence of active inflammatory changes within the joint, will have the septa and synovial fringes thickened and infiltrated with pyogenic material and gelatinous granulation-tissue, entirely altering the character of the joint and acting as an envelope or buffer to protect the carious head of the femur. It is generally, I think, agreed that we ought not to wait until the buttock is riddled with sinuses, nor must we wait until the child is unable to walk unaided. Those who advocate the expectant method of treatment must be prepared to find considerable fatty and waxy degeneration of liver and spleen from protracted suppuration, the constitution being relatively much undermined and the future prospects for the patient anything but encouraging, in consequence of the permanent infiltration of vital organs with the products of septic degeneration and purulent decomposition.

2. I must now turn to consider the next question, "How far is the local disease an outburst of a general tuberculosis?"

Undoubtedly there are cases of disseminated tubercle slowly developing or undergoing caseation and consolidation. Other cases will rapidly develop into acute tuberculosis, the disease spreading by contact and migration to adjacent tissues, or into the trabeculæ of bone, or through the connective tissue of the pulmonary cells. In phthisical subjects we know how the tubercle tends to localize itself at the apex. It is because of this localization that it has been thought possible to cut down upon and excise the infected portion of lung, and so to prolong life. If such an operation were ever admitted into the domain of surgery as a practical operation, there can be no objection to excise a diseased hip-joint, which is a constant source of pain, trouble, and inconvenience to the patient. Besides tubercle of bone we have also scrofulous disease, which more directly involves the synovial membrane and encrusting cartilage, causing first inflammatory mischief, ulceration, and erosion, especially at the junction of cartilage and bone, followed by caseation, suppuration, and rarefying ostitis. To remove the focus of disease in such cases must be desirable and even essential when we consider the intense suffering of the little patient, coupled with rapid emaciation and involvement of the vital tissues of the body, with constant purulent discharge from the sinuses leading to the joint.

Then as regards local damage, I have no doubt in my own mind that hip-disease is in most cases caused by a sprain of the delicate tissues of the joint. A child may not be of a pronounced tubercular or strumous diathesis, and yet he may have a delicate or enfeebled constitution, so that recovery from a simple sprain may be tardy or incomplete. Such children are liable to persistent inflammatory mischief chiefly because the joint is kept in constant movement.

We know what serious effects must accrue to even superficial wounds if they are not promptly placed in a state of absolute rest and quiescence.

3. We must next inquire as to the efficiency of our accustomed methods for the after-treatment of hip-joint excision.

In this case we have a joint that we can more easily excise than any other large joint, but unfortunately we are seriously hampered by the fact that we cannot deal so efficiently with the acetabulum as we should like to do.

It is for this reason, I think, that we have to lament so many failures in the treatment of this disease.

By a dexterous enucleation of the head of the femur the surgeon may succeed in winning triumphant applause from the visitors who occupy the upper benches of an operating theatre, but the practical surgeon knows that, as with an army in the field, the general must look well after his impedimenta before he can claim to have routed the enemy.

The removal of the head, neck, and great trochanter clears the way for the effectual treatment of the diseased acetabulum, but it may be necessary for the surgeon to prolong his vertical incision so as to expose the whole of the diseased structures. By the use of broad metal retractors this can be done, but it often happens that in consequence of inflammatory thickening of the superficial tissues the proper exposure is difficult to effect.

By the careful use of the gouge trepan or bone pliers the disease of the acetabulum may be effectually removed. The surgeon must of course guard well the pelvic fascia, which is close to the posterior border of the acetabulum. The innominate bone is not a convenient structure to treat surgically. The centre of the acetabulum being the point at which the three pelvic bones (which are separate in the fœtus) ultimately unite, and finally become welded together to form the os innominatum, it is of course out of the question to excise any of these bones. The vascular supply, like that of all flat bones, is deficient, so that our chief aim must be to favor the deposition of plastic material within the cavity, which in course of time becomes consolidated and in many cases ossified.

Another cause of failure in the treatment of hip-disease is the unjustifiable delay which so often occurs from the parents neglecting to bring the case to the surgeon in the early progress of the disease. It may be that some medical advice has been obtained in the earlier stages, but how can it be possible to provide efficient rest and hygienic surroundings in the houses in which the children suffering from hip-disease for the most part reside? Not unlikely the little sufferer is one of a large family residing in one room at the top of the house. The damage may have been originally caused by the child falling down a rickety staircase, very much out of repair from constant daily use by the several families lodging under one roof. In the upper ranks of society, where we can, regardless of expense, provide efficient means for maintaining the damaged limb in a condition of absolute rest, we may entertain very fair hope of obtaining satisfactory cures by treating the disease during the incipient stage and before destruction of cartilage has occurred. The all-pervading and pernicious influence of scrofula, with its deep-rooted tendencies to resist all efforts at repair for the structural consolidation of the joint, may embarrass us considerably, but this need not dishearten us. It becomes absolutely essential for the surgeon to use every endeavor to relieve the little sufferer, worn out by protracted disease within the joint. He must also prevent, if possible, the spread of ulceration and erosion of the cartilage covering both femur and acetabulum by opening up the joint and evacuating the pus which is pent up within the capsule of the joint and in the folds of the synovial fringes.

The precautions which are required for effectually carrying out the expectant treatment during the incipient stages of the disease are such as avail to secure permanent quiescence of the inflamed joint, by keeping the child in the recumbent posture and under restraint. It is therefore of primary importance to place the child in a locality where he can obtain abundance of fresh, dry air.

By a prolonged sojourn at the seaside, the inhalation of iodine and bromine from the sea and the restorative effects of the ozone will aid the recuperative powers of nature to invigorate the constitution, and so stimulate the nutritive and assimilative functions of the body to increased activity.

The child should have a horse-hair mattress made just about the size of the body, and supported upon a basket-work trestle with handles, so that the patient can be transported from place to place or from bed to perambulator without moving the body. He should have plenty of good nourishing food, and be kept, during the prevalence of fine weather, as much as possible out in the open air, but carefully protected from the direct rays of the sun. The thorax can be strapped to the bed, and a weight and pulley properly adjusted to the leg so as to keep up extension, and special care taken to avoid eversion of the foot.

Similar precautions will be required during the protracted period of convalescence after hip excision. The surgeon will carefully attend to the administration of a tonic when required. During the winter months cod-liver oil may be given persistently, either alone or in combination with the hypophosphite wine. Should the oil disagree, it may be necessary to give one of the emulsions properly flavored, or a preliminary course of treatment to rectify any gastric disturbance. I frequently find it useful to prescribe quinine in half-grain doses, or the quinine and iron mixture in combination with iron and ammonia. I have written elsewhere strongly against the use of "Chemical Food," because the insoluble phosphates therein are merely suspended in syrup and not dissolved. We cannot expect the gastric mucous membrane to do that which the alchemist has failed to do,—viz., to dissolve the phosphates. It is for this reason that Messrs. Corbyn, Savory, and Moore, and other chemists have succeeded by an elaborate process in dissolving the corresponding salts of the hypophosphites, so that a perfectly clear solution of the salts of lime, soda, magnesia, and iron can be given in doses of about twenty to thirty minims properly diluted, or in the form of hypophosphite wine, even to the most fastidious children. When the disease of the joint has advanced to the stage of suppuration, we must carefully consider the propriety of excision. The persistence of acute nocturnal pains, progressive emaciation, mental distress, and general failure of health are indications that acute mischief is occurring in the joint. The surgeon having detected the existence of carious or denuded bone, should not delay excision until the constitution is worn out by persistent burrowing abscesses and sinuses. No wonder that many hip excisions have failed or ended badly, because the surgeon has delayed too long the needful operation, until the child has attained an age when successful operations are rare; or until the buttock is riddled with sinuses which lead down to denuded bone both in and around the acetabulum. The operation itself should be as complete as possible. Not only must all sequestra be removed, but the granulation-tissue and the remnants of capsule, etc., should be scraped, and the wound carefully irrigated with perchloride solution, iodine water, or chloride of zinc solution.

I then pack the wound and the pouches of synovial membrane very carefully with thin strips of lint soaked in antiseptic solution. A large drainage-tube should be passed down to the acetabulum and the edges of the wound in part approximated, but sufficient room must be left for the removal of the compresses and the after-irrigation of the wound. I think it very important to favor first of all complete restraint of all hemorrhage by the internal packing of the deep pouches, and then in the after-treatment to watch carefully and encourage the healing of the deep parts by granulation towards the surface. The flaps may be supported by two firm absorbent pads of lint or salicylic wool and secured by a spica bandage.

The limb must be kept extended until complete consolidation has taken place, so as to prevent contraction of the muscles, undue shortening, and eversion of the foot. The leg should be supported by firm sand-bags, and all unnecessary movements checked.

The daily internal medication of the acetabulum and all the pouches of the wound I consider of prime importance, so as to keep the wound aseptic and free from all acrid discharges.

POST-SCARLATINAL NEPHRITIS.

BY JAMES BARR, M.D.,
Physician Northern Hospital, etc., Liverpool.

(Continued from page 458.)

IN acute tubal nephritis (as in inflammation generally) there is at first active hyperæmia,—dilatation of the blood-vessels with acceleration of the current,—attended by a frequent desire to micturate a concentrated smoky albuminous fluid. Here the increased sectional area augments the static pressure, and this is not counterbalanced by any proportionate increase in the velocity, from increased frequency and force of the cardiac beats; hence we get an albuminous scanty urine, which soon becomes more scanty, as retardation and probably final stasis of the blood-current takes place in the process of inflammation. The static pressure is frequently so great as to rupture many of the Mapighian capillaries, and allow of a free escape of blood. This natural blood-letting affords relief to the hyperæmic kidneys, and may lessen the severity of what otherwise would be an intense inflammation. Regarding the further progress of the albuminuria in these cases, I cannot do better than quote from what I have previously written on this subject.*

"Dr. George Johnson says,† 'The high tension of acute Bright's disease is due to uræmic poisoning, producing contraction of the arterioles.' No doubt this explanation is correct, so far as the systemic arterioles are concerned; but in the case of the inflamed kidney the vaso-motor nerves are paralyzed, and hence the arterioles are not under their influence. As the inflammation subsides, the circulation is gradually restored;

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* Liverpool Journal, July, 1883.

† Brit. Med. Journal, April 21, 1877.

there is a free outlet for the blood through the inter-tubular capillaries, which lessens the lateral pressure in the Malpighian tufts, and thus diminishes the relative quantity of albumen. The afferent vessels still remain dilated, and freely admit the blood-current, which is greatly accelerated by the high arterial tension, and thus we get great increase in the quantity of water excreted. The diuretic effect of the urea, which was retained in the blood and serous effusions during the inflammatory stage, is probably due more to its producing high tension than to any special action on the kidney."

Dr. George Johnson says,* "This copious effusion of water is probably a reflex phenomenon, analogous to that of the rush of tears over the eye in obedience to the stimulus of a foreign body in the conjunctiva. The purpose of the flow, too, appears to be the same in both cases,—viz., to wash away materials which would otherwise impede the function and impair the structure of the organs concerned." The reasoning is specious, but the analogy not strictly accurate. In case of the eye the reflex influence of the nerves is not impaired, the parts not having reached the final stage of inflammation, and when this stage of an intense inflammation is attained the tears may be suppressed. In the case of the kidney the function of the vaso-motor nerves has been seriously impaired, and, moreover, the quantity of water discharged is not unfrequently in an inverse ratio to the amount of débris which it contains.

Acute inflammation leaves the Malpighian capillaries in such a damaged condition that albumen readily transudes through them for a long time. In the less severe cases the vessels soon resume their healthy tone, the dropsy disappears, the albumen vanishes, the desquamated epithelium is discharged, the kidneys return to their natural size, the high tension abates, and the urine becomes normal in quantity and quality. In the more severe cases congestion continues or the kidneys may appear exsanguine (the large white kidney), from the great accumulation of epithelial débris in various stages of granular and fatty degeneration (which, by the way, does not excite sufficient effusion of water to wash it away) in the convoluted tubes.

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* Diseases of the Kidney, 1852, p. 114.

In these cases the inflammation has been severe, and even after the acute stage is over the kidneys remain passively congested, which leads to increased cell-multiplication, great lateral pressure in the capillaries, with abundant albumen and scanty urine. Some of these cases, after a prolonged illness, gradually recover: the vessels improve in tone, the albumen lessens and finally disappears, the quantity of water increases, the débris is washed away, the kidneys resume their secreting functions and return towards their normal size, the tension is lessened, and the urine becomes healthy. In other cases the secondary changes go on from bad to worse, and finally the retained excrementitious products render the patient's condition incompatible with life.

The views which I have expressed regarding the transudation of water and albumen from the Malpighian capillaries may be applied to the production of dropsy; the greater the velocity and the less the static pressure of the blood in the systemic capillaries, the less the liability to serous effusion, and *vice versa.* I have entered very fully into the static and dynamic conditions of the blood in my paper on "The Pathology and Treatment of Dropsy,"* to which I may refer those who wish to see a full exposition of my views on this subject. In the general anasarca of acute Bright's disease, owing to the inaction of the kidneys, there is a retention of fluid within the system which overfills and distends all the blood-vessels. This increases the sectional area, and consequently diminishes the velocity and augments the pressure within the capillaries. There may be nephritis and almost complete anuria during the febrile stage of the disease, but no dropsy, because the fluid taken in is got rid of by other channels, such as by sensible and insensible perspiration, by the lungs and bowels. If there be any defective elimination, the fluid soon accumulates, and from its mere bulk becomes an obstacle to the propulsive power of the heart, the velocity is diminished, and the filtration through the systemic capillaries is augmented. The blood tends to move in the direction of least resistance, hence the amount of transudation through the walls of the capillaries will be directly as the static pressure within them, and inversely as the velocity. Dropsy is frequently looked upon as one of the earliest symptoms of scarlatinal nephritis, but this is not so, it is merely the result of the retention of fluid in the system with an increased pressure within the capillaries. If the elimination equals the fluid imbibed, you may have very severe nephritis without any dropsy.

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* Liverpool Medico-Chirurgical Journal, July, 1886; Therapeutic Gazette, July and August, 1886.

In acute Bright's disease the heart's action is vigorous, and, at first, it is quite able to meet all the demands which are made upon it; the surplus of expulsive power is great, overtops the high arterial tension, the blood is driven with considerable velocity through the contracted, and even the most remote, arterioles. The function of the kidneys, however, is suppressed; the excess of water is not got rid of by the skin and lungs, hence it accumulates in the blood-vessels, and gives rise to increased static pressure within them. This pressure soon more than counterbalances the velocity of the blood, and so abnormal transudation takes place into the cellular interstices of the tissues, and probably also, in many cases, into the serous cavities. The pressure, however, is universal, and not simply a pressure occurring in greater degree at the most extreme points of the circulation, as in adynamia, hence the effusion first takes place from the capillaries which are least supported, thus the dropsy usually first appears in the loose cellular tissue of the lower eyelids, from whence it quickly spreads over the whole body. In some cases you may see œdema of the lower extremities during the day, which partly subsides at night, giving place to swelling of the lower eyelids in the morning. If the heart's action fail, you get pulmonary congestion and œdema, which still further obstruct the venous return and increase its results.

Symptoms.—The disease is so well known that it will be quite unnecessary here to enter minutely into all its symptoms. However, I believe the disease is more frequent than it is recognized, which arises from the common error of using the terms dropsy and nephritis as convertible; the bloody urine may be noticed, but if it be not followed by dropsy, the part played by the nephritis in the protracted convalescence of many cases of scarlet fever is frequently overlooked. In some text-books, dropsy is spoken of as one of the earliest symptoms of scarlatinal nephritis, whereas I hold that it is a comparatively late symptom, and due to the retention of fluid within the system. It arises when the fluid ingested is in excess of that excreted by the kidney, skin, lungs, and bowels. The inflammation of the kidneys invariably precedes the appearance of dropsy by twenty-four to forty-eight hours or longer, and should be recognized by every educated practitioner who has a case of scarlet fever under his care, before the advent of dropsy, and treated accordingly whether this symptom of the disease appear or not. It is by such early recognition that we can accomplish the best results, and often arrest or mitigate the inflammatory process.

Nephritis may occur at any period during the course or convalescence of scarlet fever. When it occurs during the febrile stage of the disease, there may be severe inflammation and even complete suppression of urine for some time without any dropsy, owing to the great amount of fluid which then insensibly transpires through the skin. The toxic effect of these effete products retained in the blood is perhaps not sufficiently estimated in many cases of fatal scarlet fever during the first week. It is, however, with these cases which occur during the later periods of the disease with which we are here more immediately concerned, as is indeed indicated by the title of this paper. The nephritis most frequently occurs during the second or third week of the scarlet fever, and only very rarely after the third week. It perhaps occurs most frequently and most severely after mild cases of the fever. This arises from the fact that mild cases of scarlet fever are generally not under proper medical care, and no precautions are taken as to protection from cold or to the regulation of the diet. The nephritis is not recognized until the advent of dropsy, when the parents are first aroused to the gravity of the case, and then a medical man is consulted, when the early and very remediable stage of the disease has passed. Nephritis may, however, occur when every possible precaution has been taken and the child not out of bed.

Nephritis always sets in with more or less febrile disturbance, though in this respect there is considerable variation in different cases. In one case the thermometer may only indicate 100° Fahr., while in another it may reach 104° Fahr., or even 105° Fahr.; but usually the febrile disturbance is moderate and quickly abates. The arteries are large, being deficient in vaso-motor tone; the pulse at first is moderately frequent, large, full, long, with increased tension; it gradually becomes slower, fuller, dwells under the finger, and the tension is markedly increased. The skin is hot and dry; there is headache and general restlessness, the tongue is furred, appetite poor, considerable anorexia, and even vomiting, and the bowels are constipated. There is a feeling of weight or pains across the loins. There is constant desire to micturate small quantities of dark, smoky, or coffee-colored urine. With the diminution in the urine and the general febrile disturbance you frequently get uræmic convulsions, which are formidable but not by any means necessarily fatal symptoms. About the end of the first or second day, if the case be at all severe, you usually get dropsy, which first appears as an increased plumpness of the whole body, with slight effusion into the loose cellular tissue about the lower eyelids or the scrotum. The diminished elimination of effete material from the blood increases the thirst, which is usually gratified *ad libitum*, and hence the accumulation of fluid within the system with consequent extension of the dropsy rapidly takes place. This first gives rise to general anasarca, and afterwards, if extreme, may give rise to effusion into the pleuræ, pericardium, and peritoneum, and may produce œdema of the lungs or epiglottis with consequent suffocation.

The condition of the patient in favorable cases continues without any marked change for about a week or ten days, when the inflammatory process begins to subside, the urine increases, the dropsy diminishes, and the general condition of the patient gradually improves. According to the severity of the inflammation, the patient may make a rapid and perfect recovery, or convalescence may be very protracted, so that the urine may not be free from albumen, nor the kidneys properly excreting the normal urinary solids, for one or two years. In very severe cases the kidneys may never resume their healthy functions, and the case may lapse into one of chronic Bright's disease. Such is a brief outline of the usual symptoms and course of a case of post-scarlatinal nephritis, but the urine and dropsy, to which we have referred, require more than a passing notice.

Urine.—One of the earliest symptoms is the frequent desire to void small quantities of urine. During the hyperæmic stage—when the pulse is full and strong, the arterial tension high, the patient perhaps complaining of headache and general malaise without any special indications of kidney-mischief—the amount of water passed may not be diminished. But the active hyperæmia quickly merges into inflammation, and then the amount of urine is invariably reduced, and if the inflammation be very severe, may be even suppressed. In very young children it is difficult to collect the whole of the urine voided, but there generally can be found sufficient to make a qualitative, if not a quantitative, analysis. It is highly albuminous, usually at first of a dark smoky to a deep coffee color from the presence of blood. When the blood is very abundant, it indicates a severe attack of glomerular nephritis, which, however, is not generally so grave as the more distinctly tubular variety. Owing to the condensation, the specific gravity is high, 1020 to 1030; it is acid, and there is frequently a deposit of urates and uric acid. The total quantity of urea is greatly diminished, though, owing to the small amount of urine, the percentage may be increased. The normal amount of urea excreted in twenty-four hours should equal about one two-thousandth of the body weight, and the further the quantity recedes from this standard the greater the interference with the functions of the kidneys, and the greater the probability of uræmic convulsions. Microscopic examination of the sediment generally reveals epithelial and blood casts, blood-corpuscles, granular débris, urates, and uric acid crystals. About the end of the first week or ten days, when the inflammation has subsided, the urine becomes abundant, of a pale straw color, more or less albuminous, and of low specific gravity. The relative and absolute quantity of urea is lessened. The sediment contains renal epithelium, epithelial casts, granular débris, etc. It is, in my opinion, most important in every case when possible to make a quantitative analysis of the amount of urea, which affords a much better indication of the functional condition of the kidneys than any information that can be derived from the amount of albumen.

Dropsy.—Dropsy is a very constant symptom, though not invariably present, and the disease should always be recognized before its appearance. It is somewhat variable as to the period of its onset. It is due to the retention of fluid within the system, and as this is due to the excess of supply over elimination, the relative amount will vary under varying conditions. If there be a highly febrile condition, which causes a large amount of fluid to pass insensibly through the skin, and only slight diminution in the amount of urine excreted, there may be little or no dropsy; on the other hand, if there be complete suppression of urine and only moderate fever, while the patient is supplied with an unlimited quantity of fluid, the dropsy will occur quickly and extensively. I have not time to enter into the mechanism of the production of dropsy, but those who are interested in the subject will find it fully discussed in my paper on "The Pathology and Treatment of Dropsy."* It is, however, a most important point to consider, because effusion into the serous cavities is one of the commonest causes of death during the acute stage. Among the other causes of death, which we must not stop here to consider, may be mentioned uræmic convulsions, pleurisy, pneumonia, pulmonary œdema, œdema glottidis, empyema, and exhaustion.

Treatment.—The treatment will depend on the severity of the case, the nature of the complications, the strength of the patient, and the stage of the disease when the case comes under observation. It is often remarkable how parents and the custodians of children delay seeking medical advice in these cases, often until the disease is well advanced and dropsy becomes a prominent symptom. The child has perhaps passed through a mild attack of scarlet fever, which scarcely attracted the attention of the parents, and no medical advice was sought. The dietary may have been entirely left to the caprice of the child, and during the desquamating stage no care taken to prevent it from catching cold. The initial symptoms of nephritis treated as a matter of no consequence until, perhaps, the child has had a convulsion or dropsy appears. Then the parents become alarmed and the medical man is called in when he cannot arrest the inflammation nor mitigate its severity, and may be only able to aim at directing its course to a favorable issue. Much valuable time is thus frequently lost, and mild cases, through neglect and exposure, are converted into severe ones. Hence we often find the most severe forms of tubular nephritis following the mildest cases of scarlet fever. These cases might perhaps be more aptly described as arising from cold acting on the sensitive nerve-endings in the skin, which have been partially deprived of their natural protection by the desquamation. These cases are more apt to assume the true tubular character rather than the glomerular, and hence to be more severe.

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* Liverpool Medico-Chirurgical Journal, July, 1886; Therapeutic Gazette, July and August, 1886.

We will, however, assume that the case has been seen from the beginning and that the patient has been under the care of the medical man for the scarlet fever. When cases of this fever are properly managed, especially as to confinement to bed and mild diet, the risk of nephritis is greatly lessened. There is, perhaps, no fever in which there is greater vaso-motor disturbance. There is, as in other fevers, the loss of vascular tone, but in other fevers this is accompanied by an equivalent diminution in arterial tension; whereas in scarlet fever the heart's action is very excited, and the circulation of effete material in the blood gives rise to defective capillary circulation, with, perhaps, contraction of the arterioles, which raises the general arterial tension. So far as the kidneys are concerned we thus get dilated renal arteries, and the high aortic tension drives the blood with great force through the short dilated renal arteries into the Malpighian corpuscles.

However slight the case may appear, the medical attendant should always impress upon the parents the grave nature of the disease and the necessity for prolonged care. The disease as it occurs in children is very amenable to treatment, and the great majority of cases get permanently well if judiciously treated.

(To be concluded.)

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,
AND
WILLIAM A. EDWARDS, M.D.

(Continued from August Number.)

TRICUSPID DISEASE.

PRIMARY disease of the tricuspid valve is somewhat unusual if we exclude cases having a prenatal origin, which have already been considered, consequently primary murmurs are rare in this situation. When heard they will most usually be found to be dependent upon mitral disease which has weakened the right heart.

Balfour is of the opinion that mitral stenosis is the most frequent cause of serious tricuspid regurgitation, and the earlier in life the stenosis occurs, the more rapidly, as a rule, the tricuspid regurgitation follows, and the more serious the prognosis. As we noted in the mitral, so in the tricuspid, the murmur originates almost always from endocarditic disease, or, as Loomis says, from syphilis. The disease most usually begins during fœtal life. It seldom occurs as an independent affection in adults. It, however, does occasionally attack this valve primarily in an adult, as a case which occurred in our hospital wards last winter will illustrate. Rosenstein says that out of a hundred cases of valvular disease scarcely two occur in the tricuspid, and even in these two cases the tricuspid is not the only affected part, being nearly always accompanied by disease of another valve, usually the mitral.

Tricuspid insufficiency.—The insufficiency is more apt to be relative than absolute; that is, we are more apt to find that the ventricle is dilated so that the ring of insertion of the tricuspid valve has become so large that the flaps, while almost

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histologically intact, are unable to close the opening, than we are to note shrinking and thickening at the border of the valves. Friedreich has definitely demonstrated the fact that simple dilation of the ventricle will be sufficient to stretch the valves far enough apart to allow regurgitation.

Symptoms and physical signs.—The valve being incompetent, each systole causes a backward flow of blood from the right ventricle to auricle, and to the veins which communicate with it. The auricle speedily becomes dilated and hypertrophied, the latter in proportion to its muscular tissue, which is slight at best. The backward flow causes increased tension in the vena cava and a decrease in the pulmonary artery and the aorta. At about the fourth rib may be noted an increased area of dulness, which may extend well over to the right and below the ensiform cartilage. The ventricle becoming dilated and hypertrophied encroaches upon the left heart, and eventually finds its way in front of the left chambers; as a consequence the apex-beat becomes wavy and ill-defined. We usually note a condition of overfulness of the cervical veins, which may present a wavy impulse, systolic in time. This is much more apt to be marked in children than in adults. The portal system becomes much congested, the liver enlarged, its left lobe often receiving an impulse from the over-distended ventricle. Hemorrhoids may arise, and constitute an annoying symptom. The urine may become scanty or suppressed. Œdema and anasarca may arise late in the case, as Day* remarks in a boy, aged 11 years, under his care, in whom œdema and anasarca of the lower extremities came on a month before death. Loomis remarks that in tricuspid regurgitation dropsy of the genital organs rarely arises. All the general constitutional symptoms of cardiac disease are apt to arise early in tricuspid affections, and are almost never absent.

The physical signs in most cases of tricuspid disease will be somewhat obscure, and give evidence of a multiple cardiac lesion.

Auscultation will reveal a blowing or cooing murmur at about the ensiform cartilage, systolic in time, having its point of maximum intensity a little to the right of the bone. The second sound over the right heart is apt to be weak, on account of the deficient circulation in the pulmonary artery. From the fact that mitral disease most usually coexists we are apt to note a small radial pulse, other than this it gives no indication of disease.

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* Med. Press and Circular, Jan. 10, 1881, p. 47.

In severe cases we may hear the "sound of the jugular valves," first described by Bamberger, who considered it of great diagnostic value. The sound is produced in the veins in the neck, more particularly the jugular, by the fact that the reflux of venous blood is confined to the bulk of the vein, as the valves are unimpaired, and a sound is produced by their closure. When the valves are insufficient the pulsation occurs along the entire vein. Theoretically, liver pulsation should arise very early in a case, on account of the valveless condition of the veins in that organ, but clinically it is a very unusual symptom. However, we should bear in mind that the venous pulse may appear in both the liver and neck, and disappear several times in the course of the disease. Geigel has demonstrated the fact that under favorable circumstances the vena cava inferior may be seen and felt as a pulsating vessel, even in the right mesogastric space.*

Diagnosis.—The fact that we are not dealing with a single murmur but usually with a multiple lesion renders the diagnosis somewhat obscure. Bearing in mind the topography of the cardiac apparatus, we will at once see that a tricuspid regurgitation is always heard at the lower and right border of the sternum, never rising as high as the third rib. Furthermore, we find no accentuation of the second sound, but, on the other hand, find jugular and epigastric pulsation, with possibly a venous hum in the neck circulation. From mitral disease we differentiate tricuspid regurgitation by following out the transmission of the murmur, noting the condition of the cardiac cavities, and recognizing the accentuated second sound which is apt to accompany mitral regurgitation. Both of the murmurs are systolic in time. The further differential points have been considered under the heading of Mitral Disease.

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* S. S. Rosenstein, Cyc. Proc. Med., vol. vi. p. 149.

Tricuspid stenosis.—This lesion is so rare that we hesitate to formulate any rules for its recognition. A stenosis confined to this valve *alone* has, so far as we know, not yet been recorded. Loomis, however, mentions one case recorded by Bertin* which we have not had the opportunity of verifying.

Its causes, independently of congenital abnormalities, already considered, are the same as those that we have laid down for the other valvular lesions.

Bedford Fenwick,† however, takes exception to the statement that tricuspid stenosis is rare, except as a congenital condition, thus differing with Flint, Niemeyer, Peacock, and Rosenstein.

Fenwick, in his history of forty-six cases, most of which are in adults, remarks that the disease is almost always acquired in after-life, and that it is but very rarely, perhaps never, when found in adults, one of congenital or intra-uterine origin. The youngest age at death, of Fenwick's cases, from tricuspid stenosis, was a girl aged seventeen. The history of the case, dying at seventeen, shows definitely that the lesion was not of congenital origin. The child was in good health until she suffered an attack of acute rheumatism; after some years attention is directed to her heart, and it is found slightly diseased. Five years later she is found to have mitral stenosis and commencing disease of the aortic orifice; this by the end of the next year is found to have progressed into a state of stenosis; finally, in another year, a fresh attack of acute rheumatism has exhibited fresh inflammatory power, and she is now found to have the tricuspid orifice stenosed. Fenwick asks, Is there here a trace of a fact to support the theory of a congenital origin? His conclusions are so apt that we will quote verbatim:

1. Tricuspid stenosis is not "extraordinarily rare."
2. It is more common by far in females than in males, perhaps in the proportion of seven or eight to one.
3. It is always associated with stenosis of the mitral orifice.
4. In about twenty-five per cent. of cases the aortic orifice is also stenosed.

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* Traité des Maladies du Cœur, obs. 17.

† Trans. Lond. Path. Soc., vol. xxxii. p. 44.

5. In almost exactly fifty per cent. there is antecedent history of acute or subacute rheumatism.

6. Tricuspid stenosis, when found in adults, is due to acquired disease, and very rarely, perhaps never, of congenital origin.

In further illustration of the fact that tricuspid stenosis is occasionally met with, we cite the following cases:

Sex.	Age.	History.	Weight of Heart.	Size of Tricuspid.	Concomitants.	Reference.
M.	14	Rheumatism two years before. Second attack six months before death.	13 oz.	Only admitting little finger.	Right ventricle dilated. Right auricle vegetations. Left ventricle dilated—hypertrophy. Mitral stenosis.	A. Boye Barrow, Trans. Lond. Path. Soc., vol. xxxii. p. 74.
F.	12	Rheumatic at eight years. Second attack at twelve.	12½ oz.	Tips of two fingers; buttonhole.	Adherent pericardium. Left auricle dilated. Mitral stenosis. Died at age of twenty-three.	P. Horrocks, Ibid. p. 76.
F.	Young.	....	....	One finger.	....	Flint, Diseases of Heart.
F.	19	No rheumatic history.	....	Contracted, rigid, and ossified.	....	Burns, quoted by Peacock; Fenwick (Ibid.).
F.	17	No rheumatic history, but much exposure.	11 oz.	Two fingers.	Mitral stenosis. Right cavities dilated. Left cavities dilated—hypertrophy.	Goodhart, Brit. Med. Jour., Sept. 23, 1871.

VALUE OF WRITTEN DIRECTIONS IN THE TREATMENT OF CHRONIC AND PROLONGED ILLNESS.

BY JEROME WALKER, M.D.,
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LIKE many another physician, I have been somewhat despondent, after the treatment of chronic cases of illness, when I found, frequently, how unsatisfactory were the results,—how much had been hoped for and how little had been gained. Reflecting upon the cases that had gone from under my care only partially cured, it did not seem as if the partial relief was due entirely to want of skill or to any neglect upon my part. A more careful study of cases of chronic and prolonged illness led me to believe that patients, though starting out at first with enthusiasm to follow the doctor's advice,—perhaps the new doctor's advice,—after a while grew tired of being limited to this or that thing, or of following out the doctor's directions. And so it comes that chronic cases, or the parents of children who have been long ailing, are ever ready to try new doctors or new remedies. The chronic case is apparently just beginning to be relieved after the attending physician has repeatedly thought and studied about it, when all of a sudden the case whisks off to another doctor, who, perchance, having the previous physician's experience to guide him, takes a different line of treatment, or even follows out the same line and effects a cure, or more commonly the previous doctor's experience is his experience, and the patient, without any warning it may be, hurries to a third doctor, and so on and on until patients grow discouraged because they get little or no relief, and the doctors become discouraged also. Some of these patients, it may be intelligent and well-meaning persons, so lose their faith in the regular medical fraternity that not only do they at times revile them, but are very apt to consult quacks and irregular practitioners of various kinds. Now, all this kind of action on the part of patients is very natural and human. In this age of rush and competition the ties of friendship, and admiration for medical skill which will hold a patient to one doctor's services alone for a number of years must be very strong indeed, for the tendency in these days is "anything or anybody for a change." How, then, can prolonged or chronic cases of illness be induced to follow out any well-defined plan of treatment under one physician for a sufficient length of time to test the efficacy of the plan? I answer by treating the case on "business principles." Having once decided that such a plan would yield the best results for both patient and physician, I awaited the chronic case. It came in the person of a young lady who had chronically enlarged glands of the neck and behind the ears, which disfigured her. She had been under the care of several physicians, but had been repeatedly discouraged because she seemed to gain no improvement by treatment. I told the father that I would make no promises, but I thought I could help her, providing she would be under my care for at least three months, and would do just as she was told. For the purpose of holding both patient and doctor to faithful work (for it may be said parenthetically that doctors being human are likely to be discouraged if good results are not seen quickly), I proposed the following plan to the father, which was readily agreed to, and was put in writing, one copy being kept by the father, the other by myself:

(*a*) I to treat the patient for three consecutive months from date of writing, either at my office or at her home, seeing her as many times as I thought best, but not less than three times each week.

(*b*) To send my bills in on the first day of each month following the month of treatment.

(*c*) The patient to call at my office for treatment whenever asked to, and to *keep all* appointments, and to follow out the attending physician's directions and no other advice or direction.

(*d*) The directions to be in writing, and full and explicit.

(*e*) Bills to be paid promptly on receipt thereof.

(*f*) If any of the parties interested in the contract fail to do as agreed, the others may withdraw.

This simple agreement answered nicely. The doctor felt reasonably sure of three months' treatment of his patient and of receiving his money promptly. The patient had the confidence that a contract gives, and came promptly and as agreed upon, even when she felt that the forthcoming treatment would be severe. The father, who paid the bills, felt, as he expressed himself, "I am satisfied, for I know something about where I am. It's business." The case progressed nicely, to the satisfaction of all concerned, and though after the three months had expired the family were out of the city for several months and treatment had to be discontinued, and a cure in the ordinary sense had not been made, still all concerned were convinced that with the agreement much more had been accomplished than could have been without it.

It will be noticed that in this agreement the physician does not promise a cure, only to do what he believes he can do; neither does he say "no cure no pay," though in some rare instances it may be wise to do so.

Since this initial case, which occurred several years ago, I have insisted with benefit upon written agreements and written directions in most cases of chronic disease, and upon written directions in some cases of prolonged illness.

In no class of cases has greater benefit resulted than in prolonged gastro-intestinal ailments of children. There are ordinarily so many details necessary as to food, bathing, exercise, and other hygienic measures in the treatment of such ailments, that even the most attentive and careful of mothers or nurses is liable to forget some of them, and has too much pride to ask the doctor to repeat them. The busy doctor rattles off his directions from time to time, feels pleased with himself for his carefulness, but finds, perhaps, accidentally, that his orders have not been carried out. The mother or nurse "forgot" what he said, "there were so many things to remember." Even the doctor in the multiplicity of directions he is called upon to give in a busy round of practice finds that he, too, forgets, and is reminded, perhaps, by his little patient that what he says to-day about what he wants done is entirely different and opposed to what he directed yesterday.

It will be said by some that the writing of directions will be a bore for physicians. It need not be, for the physician can furnish himself with blanks having printed headings and sub-heads. After one has become accustomed to filling out these blanks the work will not be irksome, especially when he realizes the value of written directions in the economizing of his time, by saving repetition of oral directions, in his having something to refer to in confirmation of the advice he has given, in the hold which in most instances the directions have upon the patient or his friends. Of course he should be paid for the writing out of these directions. If he can use a type-writer so much the better.

The directions should be dated, and plainly state who they are written for. Then may follow the headings: Food, air, clothing, exercise, bathing, medicine. If several medicines are to be used it is well to number the prescriptions, No. 1, 2, etc., putting not only when and how each is to be used on the vial or other vehicle containing the medicine, but also in the written directions. One hears complaints from time to time from people that doctors don't plainly state just how medicines should be used, but say, "Use as directed." But, as one lady said, "I have so many bottles of medicine with 'Use as directed' on that I don't know what to do half the time when I go to my medicine-closet."

This probably is an extreme case, but it illustrates what even in a minor degree is an evil to be abated.

So much has been written upon the dietetics of infancy and childhood and upon the treatment of gastro-intestinal troubles, that the physician who has read many of the brochures cannot but feel that the diversity of views expressed therein by reliable authors indicates an unsatisfactory condition of pediatrical medicine as a science. Most of the writers agree as to the value of out-door air, proper clothing, and bathing, but differ as to the details of feeding and the use of medicines. My own impression is that much of the published diversity as to results is due to the uncertain data as to number and character of movements which the young patient has had, as to the digestibility of the food, its pains, discomforts, vomitings, retchings, etc., all originating in the perplexed and uncertain memories of anxious and work-driven mothers and nurses. If with written directions from the doctor there can be frequent but concisely written reports *for* the doctor, as to the food taken, its effect, the amount of sleep, the condition of the urine, the number and character of the passages, etc., there will be more precision in the practice of medicine, more satisfaction, and better pay. For these reports printed blanks may be prepared, as printed documents inspire more respect than those entirely written.

In my experience, written or printed directions are usually looked upon by those using them as something tangible,—something that will help the memory and prevent perplexity. We, as physicians, are apt to believe that most persons know how to prepare barley-water and other things which seem commonplace enough to us, but many of us have been surprised to find how few people really do know, and it is not always easy to refer such persons to a reliable and accessible book. How much better it would be to have at hand some printed slips giving such information!

Lawyers are looked upon by people at large as men who understand business, but physicians are the philanthropic but unbusiness-like persons.

Having made the effort to be business-like in agreements and directions in chronic and prolonged cases of illness, and having been encouraged by the results to continue, I have now been induced to put the subject into print, though for several years it has been mentioned to my classes at the Long Island College Hospital.

Other men have probably carried out similar plans. Why not give the results?

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Hayem: Methods of Administering Antipyrine. (*Jour. de Méd. de Paris,* May 8, 1887.)

The opinions of different authors as to dosage in using antipyrine vary greatly. Large doses at short intervals seem to be appropriate in the continued fevers, and especially in typhoid fever. In order to avoid excessive dosage some physicians have advised a large dose,—say one and a half grammes at first, its effect to be kept up by subsequent doses of seventy-five centigrammes each hour until the temperature is sufficiently lowered. In many cases the quantity required in adults may be two to four grammes. In tuberculosis Daremberg proposes to give the drug in such a way as to prevent the accession of fever. He advises the use of one gramme just before the temperature rises, then another gramme after each successive rise of three degrees, and in this way as many as six grammes may be taken in the course of a day. Huchard advises two to four grammes during a thermic period, in repeated doses of twenty-five to fifty centigrammes. Dujardin-Beaumetz considers that fifty centigrammes per day, or even during two days, is enough. Bernheim advises the use of two grammes daily. The author has been unable to produce the desired effect with fifty centigrammes, and uses instead a gramme and a half to three grammes. By giving it in small doses it does not produce sweating, and the repetition of the doses did not seem to weaken their effect. For children Hainis has arranged the following table:

Years.	Grammes.
4 to 5	.50 to .60
5 " 6	.60 " .80
7 " 9	.60 " 1.00
11 " 18	1.00 " 1.50

Penzolt gives as many decigrammes per dose as the child has lived years, and does not fear to repeat it for three consecutive hours. Moncorvo has observed the great tolerance of children for this drug, and varies his doses from twenty-five centigrammes to three grammes, according to the elevation of the temperature. Severe symptoms have manifested themselves in adults after a dosage of twelve grammes, the symptoms consisting in great prostration with weakness of the heart's action. Such a dose is, however, almost inexcusable, and it may be said that in therapeutic doses antipyrine is only slightly toxic, and does not expose one to serious accidents. It is well to remember that one case of death has been reported after the use of only three grammes, but it is not quite clear that it was due entirely to the antipyrine. Moncorvo asserts that symptoms of collapse from its use have never occurred in children: Goetze has seen and published one such case, however. In children as well as in adults, therefore, antipyrine should not be used if there is cardiac adynamia, and not in all cases if there is merely great weakness and prostration. Antipyrine may excite a more or less intense erythematous eruption, which should not be confounded with an eruption of a pathogenic character. A. F. C.

Kohts: The Treatment of Typhoid Fever in Childhood with Thallin. (*Rev. Mens. des Mal. de l'Enf.*, June, 1887.)

The author's paper is a *résumé* of his experience with thallin at the clinic for children at Strassburg. To all his patients he gave the sulphate of thallin rather than the tartrate or the tannate, for the former seemed to have the more positive antifebrile effect, and its action also was more rapid. It was also efficient in smaller doses than the latter. To children six years of age or older it should be given in capsules; to younger children it may be given in sweetened water or wine. The dose should vary between the limits of three and fifteen centigrammes, according to the age. The dosage must be regulated by the effect of the first dose. If after the first dose the temperature remained at 39° or 40°, or beyond that, the following doses were five or ten centigrammes, or in children ten to thirteen years of age they were even fifteen centigrammes. If after the first dose the temperature varied between 37.6° and 38.4°, not more than three to five centigrammes were given. With most patients no particular remission was observed until after the administration of the second dose, when the temperature usually fell to the normal or below it. The remission usually lasted two or three hours. In some cases there was free perspiration as the temperature declined, but the author never saw cyanosis, chills, or rigors occur. The pulse underwent the same oscillations as the temperature, while the respiration did not seem to be affected. In all the patients the sensorium remained intact and the general condition quite good. The drug had no effect upon the condition of the intestines nor upon the enlargement of the spleen. The diarrhœa persisted while the fever continued, and then rapidly diminished. Long-continued treatment did not seem to act unfavorably upon the kidneys. The cachectic, anæmic appearance of patients who had received this treatment for some time was quite apparent, and also the slowness of convalescence. The author prefers this method of treatment to antipyrine or hydrotherapy, but advises that it be discontinued or modified as soon as the temperature works downward.

A. F. C.

Silbermann: Hæmatology with Reference to New-Born Infants. (*Jahrb. f. K.*, xxvi. 2.)

Diseases of the blood in new-born infants have been recognized for some time, but a complete knowledge of them has been wanting for the reason, more particularly, that the physiology of the blood in children has not been sufficiently investigated. Hofmeier, however, in connection with his work on icterus in the new-born, has given the results of certain careful investigations, showing that the destruction of albumen in the disease mentioned has a bearing upon the albumen which circulates in the blood-plasma, and that this added to the effect of the quick respiration which occurs immediately after birth leads to a great consumption of red corpuscles. In the same author's investigations upon the morphology of the blood in the new-born it was found: (1) that the size of the red corpuscles was very variable; (2) that their form was more spherical than in adults; (3) that they showed no tendency to form *rouleaux;* (4) that the white corpuscles are often in greater proportion than usual; (5) that the white corpuscles tend to accumulate in *rouleaux;* (6) that they are viscid, deliquescent, and easily destroyed. The author's investigations confirmed those of Hofmeier, and showed, in addition, that the blood of the new-born contains *shadows;* that is, certain delicate, pale rings, constituting the stroma of the red corpuscles, the coloring-matter having been removed. These bodies were first discovered by Ponfick, and were found to be the more abundant the more disturbed was the child's general condition during the first few days of life. In considering the significance of these bodies it must be remembered that two questions of about equal importance have interested students in hæmatophysiology and hæmatopathology for the past ten years,—namely, the significance of hæmoglobin with reference to general tissue-changes, and the effect of the coloring-matter of the blood upon the organism after its release from the stroma and its transfer into the plasma. With reference to the latter, it is known that it is dissolved in the blood with subsequent hæmoglobinuria by the influence of certain substances, such as glycerin, pyrogallic acid, etc.; after burns, strong physical exertion, syphilis, colds, etc. Thus it is that the so-called *shadows* arise, and hence it is established that the coloring-matter of the blood is withdrawn from the red corpuscles, and their stroma is then converted into the delicate pale rings alluded to. Hæmoglobinuria is not inevitable, however, in the presence of these bodies, but if it occurs, then, according to Schmidt and his followers, the circulating blood will contain a relatively large quantity of fibrin ferment, red and white corpuscles in abundance having contributed it as a result of their destruction. Details are given by the author of his experiments upon frogs, dogs, and puppies with hæmoglobin introduced into the circulation. The deviations from the normal after such experiments corresponded to the conditions found in the blood, urine, and liver of infants during the first few days of life. It was therefore concluded that during this period there was quite a destruction of red corpuscles which resulted in the liberation of small quantities of free hæmoglobin. This was necessarily followed by hæmoglobinæmia and an increase of the fibrin ferment in the blood. These new conditions were most noticeable in the venous circulation, venous stasis and hyperæmia furnishing the evidence to that effect. Thus it appears that the condition of the blood in the newly-born predisposes to disease, and in the presence of such conditions as asphyxia, omphalitis, syphilis, gastric and intestinal catarrh and erysipelas are likely to be of grave significance. If disease should not be present, the liver would convert the hæmoglobin liberated from the destroyed red corpuscles in a few days into biliary coloring-matter, which would be eliminated in part with the fæces and the urine! To recapitulate the author's conclusions:

(1) The blood of the newly-born contains corpuscles which vary greatly in size, and also the so-called *shadows*.

(2) It is richer in fibrin ferment than the blood of adults.

(3) These peculiarities are due to the liberation of hæmoglobin and its transfer into the plasma.

(4) The richness in fibrin ferment of the blood of the newly-born predisposes to disease.

(5) All disease processes in the newly-born which involve great destruction of the albumen in the circulation are especially dangerous to life. A. F. C.

Landouzy: The Frequency of Tuberculosis in Childhood. (*Rev. Mens. des Mal. de l'Enf.*, June, 1887.)

Some years ago it was a current belief that tuberculosis in childhood was a very rare occurrence. The author was enabled to demonstrate the opposite fact in a series of autopsies upon children under two years of age, made at the Hôpital Tenon (Paris). The diagnosis which had been made in many of these cases was athrepsia. In the early part of 1887 the author made autopsies upon seven such cases, the ages being six weeks, two months, three months, six months, seven months, ten months, and one year. In all these cases there were macroscopic evidences of tuberculosis in the lungs, meninges, viscera, or glands; or the process was diffuse and generalized. These seven deaths from tuberculosis occurred in a total of twenty-three deaths among one hundred and twenty-seven children who were under observation during the given period, and in no case was the disease contracted in the hospital.

A. F. C.

Renzi: The Identity of Scrofula with Tuberculosis. (*Rev. Mens. des Mal. de l'Enf.*, June, 1887.)

The identity of scrofula and tuberculosis, which seemed to be a settled matter, was brought to a state of uncertainty by the investigations of Arloing, whose paper was read before the Academy of Sciences in Paris in 1886. His conclusions were:

(1) Pulmonary tubercle may be produced in guinea-pigs and rabbits by inoculation.

(2) True scrofula of the glands does not produce tubercles in the lungs of rabbits; it does not produce any visceral lesion in animals.

Arloing considered that these facts showed either that the virus of scrofula was entirely different from that of tubercle, or that it might be of the same nature and yet in an attenuated condition. To the foregoing conclusions the investigations made in the author's clinic are opposed. Examination of the blood and caseous products from the cervical glands of three scrofulous subjects constantly showed the presence of the tubercle bacilli. This was in 1883–84. In 1884–85 a tuberculous infection was clearly demonstrated by the subcutaneous inoculation of two guinea-pigs with two drops of blood mixed with lymph and taken from the swollen suborbital region of a little girl suffering from a slow process of scrofula. One of the guinea-pigs was killed eighty-three days later and showed the lesions of tuberculosis in an advanced stage; the other was killed after one hundred and five days and was found perfectly healthy. In another case a guinea-pig was inoculated with tuberculous virus, and fourteen days later was killed with chloroform. The lymphatic glands were found enlarged, and one of them, as large as an orange-seed, was immersed in two grammes of sterilized meat-soup. With this emulsion three guinea-pigs and three rabbits were inoculated, two of the rabbits by injection into the tissue of the lung and the other animals by subcutaneous injections. The animals were all killed twenty-six to thirty-nine days after inoculation, the autopsies showing the following results:

(1) Guinea-pig, twenty-six days from inoculation. The lymphatic glands were enlarged, especially on the side on which the inoculation was performed. There were a few tubercles in the liver; the spleen was four times the normal size.

(2) Guinea-pig, twenty-seven days from inoculation. The lymphatic glands were enlarged, especially on the side of inoculation.

(3) Guinea-pig, thirty-nine days after inoculation. The lungs, liver, and lymphatic glands showed tuberculosis. The spleen was much enlarged.

(4) Rabbit, thirty-six days after inoculation. The inoculation was made in the subcutaneous tissue. There was a small cheesy deposit at the point of inoculation, with a few small tubercles in the vicinity. The organs were healthy, the axillary and inguinal lymphatic glands were slightly enlarged at the seat of inoculation.

(5 and 6) Two rabbits, thirty-eight and thirty-nine days after inoculation in the right lung. There were small tubercles at the surface of the right lung and pleura, but no pleural infiltration.

The conclusions from these experiments were:

(1) The virus of scrofula and of tuberculosis is identical, and produces the same results in experiments upon animals.

(2) The virus from the lymphatic glands produces in rabbits as well as in guinea-pigs visceral lesions and tubercles in the lungs.

(3) The result of no experiments warrants us in considering the virus of scrofula as an attenuated virus of tubercle.

A. F. C.

Kaczorowski: The Treatment of Diphtheria. (*Centr. f. Kinderh.*, May 2, 1887.)

In the author's opinion the drift of the treatment in diphtheria is in the wrong direction, and consists in the identification of diphtheria with croup. Since the chief danger in croup lies in the obstruction of the larynx with false membranes, the principal indications are to dissolve and remove them. There is, to be sure, the same danger in diphtheria, for which reason the deposits of membrane should be removed by mechanical and chemical means. But the chief danger in diphtheria is not from the presence of the membrane, but from the subsequent septic infection, for one can usually find in most of the organs the *streptococcus pyogenes* in addition to the bacilli, which are peculiar to the diphtheritic process itself. If there are thick deposits of false membrane, they will form a barrier against the invasion of the streptococci, and only when they are broken and the underlying mucous membrane laid bare can infection take place, which is manifested by the presence of ill-omened swellings. The object of treatment, therefore, should not be to destroy the existing membrane so earnestly as to disinfect the mucous membrane which is still uninvolved, and protect it and the rest of the organism from septic infection. For this purpose a mixture of pure alcohol, camphor, and benzoic acid is recommended. To act upon the false membrane a solution containing one per cent. of salt and one-half per cent. of tincture of iodine may be taken in half-teaspoonful or teaspoonful doses every quarter-hour, and this may be used with a spray if the nasal mucous membrane is affected. The patient should get an abundance of fresh air, and a dose of castor oil should be given almost every day. A. F. C.

Mantle: Erythema Nodosum, a Specific Infectious Disease and the Bacteria associated with it. (*Lancet*, August 20, 1887.)

The paper was read before the British Medical Association. The writer took the view that in its clinical features the disease suggested its infectious origin. It develops in the midst of measles and scarlatina, but seems particularly allied to the latter. He had seen an epidemic in which children chiefly were affected, and at the same time a disease of a very similar nature took place in swine.

Five cases had been examined by him for bacteria and bacilli found in all. This fact was suggestive, although not proving the point at issue. In the discussion which followed the opposite view was taken by Dr. Brown, who believed it not an infectious disease, but admitted its close connection with rheumatism and scarlatina. The other members who participated in the discussion were inclined to think the point taken in the paper "not proven."

Tomkins: Bacteriological Observations in Connection with Summer Diarrhœa. (*Lancet*, August 20, 1887.)

The writer's observations were made in Leicester, where he is health officer. He calls attention to the fact that the disease is by no means limited to young children, although most fatal among them. Of nine thousand seven hundred cases reported in his town, only two thousand four hundred were under five years of age. In Leicester summer diarrhœa has long been very prevalent, especially in a low part of the town imperfectly sewered.

He made five autopsies within six hours after death, the findings in those made at a later period being thought untrustworthy.

From the blood taken from the heart no cultures could be obtained except in one doubtful instance; nor from the spleen; but the mesenteric glands furnished growths in three cases, and abundant growths from the kidneys in every case. Most abundant, of course, were the cultures from the walls of the intestines and the intestinal ulcers. These growths were so rapid that in three days the nutrient gelatin was liquefied and the fluid was swarming with micro-organisms.

The growths from the different organs showed but little difference under the microscope.

The bacilli were shorter and thicker than those seen in Asiatic cholera. The gelatin in every case became markedly alkaline during the growth, and in every tube there was developed the most powerful offensive odor, even to the fifth generation.

The air coming from sewer ventilators was examined where these were in the worst condition, and also in the best locality. The number of micro-organisms in the former was found to be from two thousand to six thousand per cubic metre; in the latter from sixty to nine hundred per cubic metre.

The culture-growths were slower than those obtained from the organs of the body, but the gelatin was liquefied in a similar manner and the same offensive odor was present, though to a less degree.

The author asserts from actual experiment that the micro-organisms from cultures were capable of producing a sharp diarrhœal attack. He admits that before we can establish the actual dependence of summer diarrhœa upon these micro-organisms the four following points must be proven:

1. The presence of a distinct specific organism in the blood and tissues.
2. Their artificial culture apart from the body.
3. Production of the disease by their introduction into a healthy body.
4. The presence of the same organism again in the body when such a disease is produced.

Sufficient evidence has been already adduced to demonstrate some connection between these organisms and the disease, but the exact relations must yet be proved.

George Thin: The Contagium of Scarlet Fever. A Critical Review. (*Brit. Med. Jour.*, August 20, 1887.)

This article consists of quite an exhaustive consideration of the evidence thus far brought forward regarding the specific poison of scarlatina.

The following criticisms are made upon Mr. Power's conclusion that the milk which produced the epidemic of scarlatina became infected from the disease upon the udders of the Hendon cows. Three herds became infected by sale and change of stock, the disease being in all respects identical, so far as one could judge from the descriptions.

The milk from *only one* dairy was associated with the epidemic. No contagion was carried from the other dairies. The result of inoculation of the milkers' hands was not scarlatina, but symptoms of local poisoning, with sometimes those of mild general septicæmia.

Dr. Klein found a streptococcus in the ulcers upon the udders. He inoculated calves, produced a general febrile disease, in one case fatal, and obtained the same coccus from the blood and organs. He found in the blood and organs of scarlatinal patients the same organism.

This looks certainly very plausible, but the writer's objection is that the finding of the same coccus in the two situations does not prove that it is the cause of scarlatina. There is no proof that the coccus has produced in man the disease scarlatina; and, secondly, there is wanting the proof that the disease which it has produced in animals by inoculation is scarlatina in any form.

The visceral lesions of scarlatina, even including the nephritis, are not sufficiently characteristic to enable us with certainty to distinguish it from other infectious disease or forms of blood-poisoning.

All the symptoms and all the lesions found in Dr. Klein's animals would be sufficiently explained by septic inflammation or blood-poisoning better even than by scarlatina. Nothing comparable to the eruption and desquamation of scarlet fever was ever produced in the calves nor was ever seen in the Hendon cows.

After noticing the large number of writers who have observed micro-organisms of various kinds in scarlatina, the writer passes to the consideration of the "bacillus scarlatinæ" discovered by Edington (*vide* ARCHIVES OF PEDIATRICS for July).

This bacillus was found in the blood in the early stages but not late, and found in the desquamation in the later stages but not early. It is the latter fact that gives these experiments their greatest weight.

Sufficient control experiments have not been made by Edington or others upon the bacilli of healthy skin and the skin in diseases other than scarlatina. These will doubtless soon be forthcoming.

The only absolute demonstration that Edington's bacillus is the cause of scarlatina will be that, when introduced into the blood of the human subjects, it produces the disease. Next to this in value will be that the organism is always found in the blood and organs of scarlet fever, but never elsewhere. We will be long waiting for such a position to be established. To be sure, Edington produced in animals a disease attended by erythema and followed by desquamation. This is not enough. There are many forms of erythema not scarlatinal which may even desquamate. We must see produced in animals a disease so strikingly like human scarlatina as to satisfy all clinical observers; or animals suffering from inoculation must communicate scarlatina to man. None of these criteria are as yet satisfied.

The work of Klein and Edington has opened the way, others must now step in and fill up the gaps before our knowledge on this topic can be complete.

The Treatment of Scarlatina in England.

The *Lancet* (September 3, 1887) sums up the present practice as follows:

A large portion of the profession pursue the expectant plan, —*i.e.*, watchfulness for untoward symptoms and treating these as they arise, but without making any attempt to arrest the course of the malady.

Antiseptic gargles are freely used, and many employ topical applications of the same nature to the throat and nose; all should effect cleanliness at least. Compresses of various degrees of heat and moisture are generally used externally.

Nothing is more effective than ice and raspberry vinegar to relieve the disagreeable dryness in the throat and the thirst.

Iced-water compresses to the shorn scalp or irrigation through a coil of rubber tubing is the best means of controlling central symptoms.

Aconite in frequent small doses is extensively employed, but needs to be used with caution in children.

Cold bathing is used by a few, cold sponging by almost all.

Pretty much all the "specifics" have been abandoned. Belladonna finds but few adherents, and carbonate of ammonia almost none.

Considerable difference of opinion exists in regard to inunctions, two of the most recent writers taking opposite views,—Goodhart advocating general inunction and Angel Money opposing it, although he does not oppose relieving the tension of palms and soles by vaseline scented with eucalyptol.

Luff: Atropine-Poisoning in a Child Two Years Old. Recovery. (*Brit. Med. Jour.*, July 2, 1887.)

Two hours before admission the child swallowed an eyewash containing one grain of atropine. There was extreme dilatation of the pupils; deglutition was impossible; the nervous system was in a state of general excitement, which was succeeded in half an hour by coma. Five hours after the dose a red rash appeared over the face, upper part of chest, and upper extremities. One-sixth of a grain of morphia was injected subcutaneously, and this dose was repeated in four hours, free stimulation hypodermically being kept up. In twenty-one hours all the toxic symptoms had passed away and the case made a rapid recovery.

II.—MEDICINE.

Coutts: Some Later Effects of Rickets. (*Brit. Med. Jour.*, June 4, 1887.)

This paper is concerned especially with the effects upon the nervous system. It is well known that a large number of cases of epilepsy later in life had their origin in convulsions in infancy, of which it is also well known that rickets is the most prolific cause. Thus Gowers ascribed ten per cent. of his cases of epilepsy to rickets in infancy. The writer's experience, chiefly among children, gives a larger proportion, viz., seventeen per cent.

Chorea likewise seems often to be formed by the same disease. Of fifty-one cases of chorea investigated, in eleven there was sufficient evidence to warrant an assumption of earlier rickets.

Other nervous symptoms depending on this cause referred to are headaches (also noticed by Day), migraine, tooth-grinding, somnambulism, and night-terrors, and that group of ill-defined symptoms known as "nervousness."

Viewing the subject from the opposite stand-point, of forty-three cases presenting undoubted evidence of rickets, twelve were distinctly neurotic,—two being epileptic, one choreic, three somnambulists, five suffered from recurrent headaches, and one had attacks resembling *petit mal.* The writer makes a strong plea for the careful consideration for these late sequelæ.

Fränkel: Angina Lacunaris and Diphtheritica. (*Jahrb. f. K.*, Nos. 17, 18, xxvi. 1 [from *Berl. Kl. Wochen.*, 1886].)

Angina lacunaris, or follicular angina, is an infectious disease. This is shown by the course of the fever which accompanies it, the existence of swelling of the spleen, etc., and it shares with other infectious diseases, such as erysipelas, articular rheumatism, and pneumonia, the peculiarity that it establishes a predisposition to such a disease. Angina lacunaris also sometimes occurs as an epidemic, and the fact that it may take the form of what might be called a family epidemic leaves little room for doubt as to its infectious character. The disease is constituted by an inflammation of the mucous membrane of the lacunæ or crypts in the tonsils; a muco-purulent secretion exuding from them upon the surface of those bodies. The result of this exudation is a tender, dirty-white deposit, which contains no fibrin. In exceptional cases the process extends so as to include the arch of the palate and the entire surface of the tonsils, but such cases are probably not genuine cases of angina lacunaris. The author's bacteriological investigations for the purpose of finding the medium by which the infectiveness of this disease is transmitted have not as yet been concluded. The fact that taking cold has a well-known influence in exciting this disease does not efficiently oppose the possibility that a fungus may play a *rôle* in that direction. Taking cold might have the significance of an injury to the bones, which must precede the development of osteo-myelitis when this is to be produced (artificially, as in an animal ?) by an injection of staphylococcus aureus. With regard to the relation of angina lacunaris to pharyngeal diphtheria, the author maintains that every case in which there is idiopathic necrosis in the pharynx is true diphtheria, though the presence of false membrane is not of itself a conclusive evidence of such a condition. True diphtheria must be sharply differentiated, however, from angina lacunaris, though neither the micro-organism of diphtheria nor that of angina lacunaris has as yet been discovered. The latter disease is often seen at a time when true diphtheria is not prevalent. In all cases in which there is neither false membrane nor necrosis of the pharynx inspection alone will furnish no sure means for differentiation. Peritonsillar abscess and herpes labialis do not occur in true diphtheria, while paralysis of the velum palati rarely occurs in angina lacunaris. Under all circumstances, in either disease, isolation of the patients should be insisted upon. A. F. C.

Stärker: The Treatment of Rachitis with Phosphorus. (*Centr. f. Kinderh.*, April 16, 1887.)

This paper is an analysis of twenty-three cases of rachitis, most of them severe ones, which were treated with phosphorus in the polyclinic of Prof. Thomas at Freiburg. The formula was the well-known one of one centigramme of phosphorus to one hundred grammes of cod-liver oil, to be taken in coffee, spoonful doses, twice daily. During very warm weather the proportion of five milligrammes of phosphorus to fifty grammes of cod-liver oil or olive oil was used. Every other form of treatment, with the exception of that pertaining to the regulating of the diet and hygiene, was intermitted while the phosphorus was used. It was noted that in some of the cases benefit was derived from phosphorus after other means of treatment had failed. The age of the patients varied between a few months and four years. The total quantity of phosphorus used in a single case varied between one and six centimetres, and the following data will show that individual symptoms were differently affected in different cases. Disturbances in the digestive organs were unaffected in eighteen cases, in four were improved, and in one were made worse. In fifteen cases there was a favorable influence in respect to ossification of the skull, in one case the influence was slight. In fourteen cases the influence upon the development of the teeth was favorable, in five it was not positive. Deformities of the thorax were influenced nine times favorably, and seven times very little, and one time not at all. The shape of the epiphyses was improved in twenty-one cases, in one no improvement was perceptible. Of spasm of the glottis, one case was improved, in one other the result was doubtful. Sweating of the head was improved in five cases, not benefited in one. In eight cases of restlessness and night-terrors there was a favorable, in two an unfavorable, result. In eleven cases in which the extremities were crooked there was a favorable result, in four it was not positive, and in two negative. Capability for locomotion was improved in seventeen cases, in two it was not positively demonstrated, in four it was negative. Bronchitis was benefited in four cases, the result was not positive in one, it was negative in five. The general condition was benefited in eighteen cases, not positive in three, negative in two. Those cases in which scrofula was prominent as a complicating element were cured if cod-liver oil and an improved *régime* were simultaneously used with the phosphorus, while in cases in which the former agents were not used the rachitis was cured, but the scrofula persisted. Of the twenty-three cases which were treated, eleven were cured, bronchitis and scrofula continuing in three of them; seven were much benefited, scrofula and spondylitis continuing in two of them; four were slightly benefited; in one the result was negative. Improvement was usually noticeable in two to three weeks after the phosphorus treatment was commenced. A. F. C.

Cheadle: The Pathology and Treatment of Tetany (Carpo-pedal Spasm), Laryngismus, and Convulsions. (*Lancet*, May 9 and 14, 1887.)

These three affections are intimately associated, and all depend in like manner upon rickets. In every case of carpopedal spasm the author has found well-marked rickets present. In fourteen cases published by Abercrombie the same fact was observed. Every case of tetany was furthermore associated with laryngismus. The author has never seen laryngismus where rickets was not also present. Gee found it in forty-eight out of fifty cases. A large number of these cases suffer from general convulsions.

This constitutional state of rickets is closely analogous to the constitutional state in which tetany occurs in adults.

Rickets is not merely defective nutrition of bone, but of muscle and nerve as well. It arises largely from a diet deficient in animal albuminates and animal fats,—*i.e.*, such an one as is largely composed of starch and sugar. A closely-allied condition may come from the cachexia of congenital syphilis. The final result in both cases is a hyper-excitability of motor nerve-cells depending on defective nutrition. There is no change in the cerebrum, but merely in the ganglia of the cord; the change here is probably not an organic one.

The exciting causes are reflex irritation from dentition, diarrhœa, cold, or indigestible food. The morbidly sensitive nervous system responds to the slightest irritation.

Children do not die from carpo-pedal spasm, but may do so from laryngismus or the supervention of general convulsions.

Treatment.—The older writers based their therapeutics upon a supposed congestion of the cord, and hence local bleeding by cups and leeches occupied a prominent place. In these poor debilitated children nothing could be more disastrous.

The indications are threefold:

1. To relieve dangerous convulsive seizures when they occur.
2. To ward off attacks from recurring.
3. To remove the constitutional rachitic state upon which they depend.

For the first indication in laryngismus, a dash of cold water in the face, a hot sponge to the larynx, or vomiting induced by the finger in the throat may be tried.

In general convulsions, chloroform inhalations or ten grains of chloral and twenty of bromide by the rectum. In one case the author gave chloral hypodermically with excellent effects.

To prevent recurrence of attacks the bromide and chloral must be given for some weeks in doses large enough to keep the system under their influence. For a child of six months half a grain of chloral and three of bromide should be given every four hours. Children bear chloral well, and the dose may be increased considerably without danger in case of more urgent symptoms. In case of failure of chloral, Calabar bean may be resorted to.

Meanwhile the quiescence secured should be used to treat the constitutional state by means of full nutritious diet, composed of milk and cream, or raw meat finely scraped if milk cannot be borne, entire wheat flour, and cod-liver oil and the syrup of the lactophosphate of lime and iron.

Brandy given with food in half-drachm or drachm doses is a very valuable adjunct.

If undigested food is the cause of an attack, an emetic or a dose of castor oil should be given. Diarrhœa should never be allowed to run on unchecked, as it drains off the nutriment and sets up irritation. It is best controlled by bismuth and opium.

Haig-Brown: Comparative Notes of Rötheln, Measles, and Scarlatina. (*Brit. Med. Jour.*, April 16, 1887.)

The writer's field of observation was a boys' boarding-school. Of rötheln there were two hundred and two cases, all of which spread from a single case.

In seventy-five cases the *period of incubation* could be pretty accurately determined. In none was it less than six or over seventeen days.

Less than 9 days in 11 cases.	12 days in 10 cases.
9 days in 10 cases.	13 " " 6 "
10 " " 11 "	14 " " 11 "
11 " " 18 "	Over 14 " " 9 "

The *highest temperature* was noted in sixty-three cases; in each it was consistent with the development of the eruption.

105° was reached in 2 cases.	101° was reached in 5 cases.
104° " " " 1 case.	100° " " " 9 "
103° " " " 2 cases.	99° " " " 11 "
102° " " " 1 case.	98° " " " 32 "

Injection of the conjunctiva present in one hundred and twelve, absent in forty-seven, cases.

Catarrh of fauces and pharynx present in one hundred and three, absent in fifty-six.

Bronchial catarrh present in five, absent in one hundred and fifty-four.

Diarrhœa absent in all.

Enlargement of the posterior cervical glands present in seventy-five, absent in eighty-four.

Rash.—This very much resembled measles, but differed in being less dusky and in each spot having an areola of its own before coalescence, and in coming on the chest before the face. It appeared on the first day in one hundred and nineteen cases, second in thirty-nine cases, third in one case.

Desquamation fine and brawny, usually limited to the face; in a few cases seen on the chest; in no case on palms or soles. It was present in fifty-five cases, absent in one hundred and four.

Complications and sequelæ present in forty-six, absent in one hundred and thirteen, cases. Weakness of the eyes occurred in eight; blepharitis in four; follicular tonsillitis in seven; persistent cervical adenitis in five, once ending in suppuration; Eustachian catarrh in three; herpes labialis in four; persistent coryza in three; laryngeal catarrh in two; bronchial catarrh in five; pneumonia in two; nephritis in one; febrile albuminuria in two. All these occurred within three weeks of the onset.

Previous disease:

5 had previously had rötheln (?), 154 had not.
144 " " " measles, 15 " "
42 " " " scarlatina, 117 " "

The above epidemic occurred in the month of January.

MEASLES.

One case was imported in June by a boy who had been out on a visit; seventy-six cases developed from this one, in regular fortnightly batches. The following are the statistics of sixty cases:

Incubation fourteen days in all.

Highest temperature coincided in every case with the full development of the rash.

It reached	105°	in	1 case.
"	104°	"	16 cases.
"	103°	"	25 "
"	102°	"	8 "
"	101°	"	6 "
"	99°	"	1 case (second attack).

Injection of the conjunctiva was present in fifty-nine cases, absent in one (second attack).

Coryza was present in fifty-one, absent in nine.

Diarrhœa was present in three, absent in fifty-seven.

Enlargement of the posterior cervical glands was present in four, absent in fifty-six, cases.

Desquamation was present in all cases but the second attack.

The *measly odor* was distinct in forty-two, not detected in eighteen, cases.

The principal complications and sequelæ were, bronchitis slight in twenty-four, severe in four; hemorrhages in two (subcutaneous and nasal); endocarditis and pericarditis with effusion each in one case; albuminuria (febrile) in five.

Previous disease.—Nineteen had had rötheln, twenty scarlatina, and one measles.

Duration of infection.—Fifty-one cases were discharged to go home on the twenty-ninth day, and seven were taken home between the twenty-first and twenty-ninth days without in any case conveying the disease to their families.

During the epidemic of rötheln seven well-marked cases of *scarlatina* occurred in the school, all traceable to one local cause; there was no resemblance between the eruption of the two diseases. Two years before, however, a febrile epidemic (rötheln (?)) occurred in which the rash bore a strong likeness to scarlatina, though the other features were wanting.

Money: Knee-Jerk as a Point of Differential Diagnosis between Typhoid Fever and Meningitis. (*Lancet,* May 21, 1887.)

The experience of the writer confirms the statement of Hughlings Jackson, made recently, with reference to the value of this differential symptom. He has tested it in twenty-five cases, and never observed the knee-jerk to be absent in typhoid, except on the day or two preceding death, in fatal cases. Although it occasionally happens that it persists in tubercular meningitis, this is exceptional. Sometimes in this disease the knee-jerk varies from day to day, now being present and now absent. It is a more valuable symptom than enlargement of the spleen, and is practically never lost as a result of simple pyrexia.

Chaffey: Fibrinous Deposits within the Heart in Diphtheria and some other Diseases of Children. (*Brit. Med. Jour.*, July 16, 1887.)

In two hundred autopsies, the following examples were observed of what are commonly described as *ante-mortem* clots:

Phthisis.—Fourteen cases; marked fibrinous deposits in four cases; slight or absent in ten cases.

Tuberculosis (other than phthisis).—Thirty-three cases; in only three were marked fibrinous deposits; in two of these the heart-muscle was very fatty. .

Diphtheria.—Twenty-three cases; over one-half showed marked deposits, evidently *ante-mortem*. They occupied the right ventricle chiefly, although the left side was usually affected to a lesser degree. In all the diphtheria cases small deposits were seen, except one dying of diphtheritic paralysis. This was the only case in which a distinct *bruit* was noticed during life.

In seventeen diphtheritic cases in which the heart-muscle was examined, more or less general fatty degeneration was found in every instance.

Hypostatic pneumonia or congestion was associated in most cases with deposits on both sides of the heart.

Collapse and emphysema were present in nearly all the diphtheritic cases.

In the only three cases in which the deposits were on the right side alone, there was collapse at the bases and posterior parts of the lungs, pneumonia and congestion being absent. This supports the view that excessive fibrinous deposits in the right heart lead to collapse of the lungs; but there is also *post-mortem* evidence that the pneumonia and congestion are secondary to the collapse.

The course of events is believed to be something as follows:

1. Deposition of fibrin in the right heart.
2. Partial blocking of the pulmonary artery by extension of the deposit.
3. Collapse of the remote parts of the lung with emphysema of the anterior parts.

4. Feeble circulation in the left heart.
5. Deposit in the left heart, extending from the chordæ tendinæ of the valves to the aorta and the left auricle.
6. Prolongations into auricular appendix and the pulmonary veins.
7. Hindrance to the return of pulmonary circulation, and hence congestion of parts previously collapsed.

Warner and Beach: A Case of Chronic Meningitis, Syphilitic (?), causing Progressive Dementia in a Boy of Seven Years. (*Brit. Med. Jour.*, April 30, 1887.)

The patient was under observation three years. As an infant he had snuffles and sores about the nates; never had fits. He grew to be quite a strong boy, and learned lessons fairly at school. A certain difficulty of movements was first noticed, then headaches, the patient crying frequently. He grew progressively worse; was sent to an asylum, where he died.

The autopsy showed the dura adherent to a subjacent false membrane, which was old. It was attached here and there to the upper surface of the pia by a thin membrane, which could be traced for some distance along the floor of the skull.

The maternal grandmother was epileptic, the mother liable to spectral illusions, and the father was pretty clearly syphilitic.

Syphilis was stated not to be a common cause of imbecility.

Frew: Diabetes in a Girl of Nine Years, with an unusual Hereditary History. (*Glasgow Med. Journal,* April, 1887.)

The child's grandfather, an uncle, and an aunt, all on the father's side, had died from the disease. About nine months after first symptoms appeared, double cataract developed. Dietetic directions were not carried out, and the case died. The writer gives quite a full bibliography of cases of diabetes in childhood.

Holt: Iodoform Inunctions in Meningitis. (*London Practitioner,* May, 1887.)

Five cases are briefly reported. The first was an infant of eight months. The case had gone on from bad to worse until the eleventh day, when inunctions of iodoform and vaseline (one to four) were begun. Improvement was noticed in two or three days, and the patient recovered.

Treatment was continued only one day in the second case, when the patient died, and of course no result.

The third case died on the third day of the disease, the symptoms being very severe.

The fourth case was ten weeks old. The bones were not ossified, and the head doubled in size. In spite of frequent attacks of convulsions, the case ultimately recovered.

The last case (nine months old) had constipation, vomiting, and enlargement of the head, but no convulsions. It recovered.

The results obtained lead the author to regard the new method as of some value in the treatment of meningitis.

Wilkinson: The Cure of Ringworm by a Single Application of Carbolic Acid. (*Lancet*, May 28, 1887.)

The writer describes the following method, which he recommends highly. The remedy is to be used by the physician alone. Take a tooth-brush and cut the bristles short, and with this rub thoroughly into the hair-roots pure glacial carbolic acid until all parts are thoroughly touched. Wash the head from time to time, but a second application of the acid will not be necessary if the first one has been carefully done. The clothes are also to be disinfected.

Owen: Purpura Hemorrhagica. (*Lancet*, July 23, 1887.)

The patient, a well-grown girl of eleven years, had suffered more or less from hemorrhages for about a year. First from the bowel, lasting only a few days and not recurring; later there was occasionally epistaxis, but for two months before admission it had been almost daily seen. There had been bleeding from one ear, but never any purpuric spots on the body or joint-swelling; no bleeding from the mouth. There was no family history of purpura or hæmophilia. The child was not specially anæmic, and there was no cardiac disease. Arsenic and fresh fruits were used in the treatment with decided benefit. The case was unique in the fact that at no time were any spots seen upon the skin, yet the absence of marked anæmia, of splenic enlargement, and of a family history of hæmophilia seemed to point to purpura hemorrhagica as the diagnosis.

Turner: Diphtheria in Animals. (*Brit. Med. Jour.*, August 20, 1887.)

In a report made to the Local Government Board is presented a summary of existing knowledge upon this subject.

In 1882 a pigeon was brought to him for dissection, in which the whole windpipe was covered with a consistent membrane exactly like a case of croup. Inoculation in the fauces of other pigeons by this membrane produced a similar disease.

In 1883 an epidemic of diphtheria occurred in the village of Braughing, in which the cases were on a farm where the fowls were dying of a disease like that above mentioned. Infection extended to other farms, being preceded by a similar affection among the fowls. Dr. Turner has since noticed a similar association in other cases.

In 1886 the disease caused great havoc among the chickens and pheasants of Tongham. A man took an infected fowl home, and in a short time diphtheria broke out in his family, this being the first case in that village.

Swine and horses had also been found suffering from diphtheria. In an epidemic at Brent-Pelham a kitten had previously suffered from a throat-affection, attended by swelling of the throat and foul discharge from the nostrils, in the house where the first cases of diphtheria occurred.

Instances are related where cats had become infected from man.

In the *Journal*, January 3, 1885, Dr. Kenshaw published accounts of the successful inoculation of cats with diphtheria from the human subject.

Instances are related in which "strangles" among horses either occurred with or preceded diphtheria in households; and one instance of the disease in a shepherd's family after it had been seen among the sheep.

Fiedberger has given special attention to the disease among fowls, and described appearances closely corresponding to those found in human diphtheria. It is admitted to be contagious, and others have succeeded in infecting healthy animals.

Loeffler has found, in studying the disease from a bacteriological stand-point, that it is produced by different bacilli in the fowl, the calf, and the human subject. These facts militate against the doctrine of identity of disease in the three animals. It is, however, quite possible that the lower animals may become infected with human diphtheria.

This has been stated already with reference to cats by several observers, and it would be interesting to have it confirmed by experimental investigations.

W. R. Smith: A Note on the Bacillus Scarlatinæ of Jamieson and Edington. (*Brit. Med. Jour.*, July 9, 1887.)

The position is taken that this bacillus might be questioned on *a priori* grounds, since its mode of growth was fundamentally opposed to the best experience in bacteriology: first in that it was capable of forming a scum in a single night; secondly, since it grew abundantly in the presence of several species of organisms.

Gelatin-plate cultures were made from epidermic scales taken from a case of sudamina, and a bacillus was discovered strikingly like the so-called bacillus scarlatinæ. The writer considers it the common septic bacillus.

[The profession will await with interest the report of the committee of the Medico-Chirurgical Society of Edinburgh, appointed to investigate the whole subject and report all the experiments.]

Gayet: Ophthalmia Neonatorum. (*Lancet,* June 18, 1887.)

This is an abstract of a clinical lecture upon the subject, in which the lecturer urges strongly the necessity of searching for the gonococcus in all these cases. The following is an easy and rapid method: A drop of pus is placed on a glass slide and spread out by means of a second slide. Each one is then stained in an alcoholic solution of methyl blue with an equal volume of water, and allowed to remain two minutes. They are then washed in plenty of water. Each leucocyte will be seen under the microscope to have three or four nuclei, this being the special character of the disease; the increase in nuclei heralding the approach of the gonococci, which are seen as blue spherical bodies in the interior of the leucocytes. If one leucocyte so invaded can be discovered, the diagnosis can be made positively.

The indications for treatment are:

1. To clear away the agent of infection.
2. To prevent its development.
3. To destroy it where it is.

First, careful washing out is necessary, the eyelids should be everted, the conjunctiva stretched, and all the folds of its sac thoroughly syringed out with a ball syringe. The lids should then be turned back, rubbed against each other, and, after again everting, the syringing repeated. To destroy the microbes which have already penetrated into the conjunctival sac the solid or mitigated stick of nitrate of silver should be used, and the excess neutralized immediately by a salt solution.

The eye should be washed with a sublimate solution, one to six thousand, and iced water compresses kept constantly applied. Great care is necessary to prevent relapses in cases apparently cured.

As a prophylactic measure, douches of the sublimate solution, one to six thousand, should be used in all labors, especially where the woman suffers from leucorrhœa.

Dukes: Scarlet Fever and its Treatment. (*Brit. Med. Journal*, July 9, 1887.)

Following the suggestion of Illingworth (*Brit. Med. Jour.*, May 1, 1886), the writer has been using the biniodide of mercury in scarlatina, and he now advocates it as a specific in this disease. It diminishes the fever and the desquamation to a marked degree. Throat symptoms subside promptly under its use. The only drawback (!) which has been found to its use is that if given early the disease is cut short, so that the physician may be led to doubt his diagnosis.

The writer's experience amounts to "several" cases.

Moncorvo: Etiology of Disseminated Sclerosis in Children, and the Pathogenic Influence of Hereditary Syphilis. (*Rev. Mens. des Mal. de l'Enf.*, June, 1887.)

Although numerous cases of this disease are recorded, it is, notwithstanding, of comparatively infrequent occurrence. The author has been able to collect twenty-one cases from all sources. The etiology of the disease is its most obscure part. As to age, it may occur very early in life, as early as the sixteenth month, or as late as the seventh year. It was observed by Charcot that among adults more females were affected than males, and the same fact holds good among children, the ratio being twelve to nine. Heredity has a certain bearing upon the production of the disease, and, aside from predisposing conditions acting directly upon the cord, there is a pathogenic connection between encephalo- or myelo-pathies and infectious diseases. Charcot, Bourneville, and others have found the same correlation in adults. Marie has advanced the following hypothesis, which is, in the author's opinion, the most acceptable of any, that "in infectious diseases the lesions of multilocular sclerosis may be consecutive to those of the arteries." Marie and Jandrassick subsequently confirmed the perivascular origin of cerebral sclerosis, and this is probably due to the entrance into the blood of an infectious or virulent element. Assuming that the latter statement is a fact, the author advances the idea of the etiological relationship of hereditary syphilis to sclerosis, which seems to him a reasonable supposition in view of the undoubted influence of syphilis in connection with lesions of the liver, spleen, lungs, heart, kidneys, intestine, and peritoneum. Besides, Fournier has seen several cases of paraplegia in childhood and adult life which were due to the influence of hereditary syphilis. The influence of syphilis probably consists in its tendency to disseminate in the interstitial connective tissue, and also in the fact that it is a general disease of an infectious character. A case is narrated in which antisyphilitic treatment was adopted for several months with curative effect, no evidence of recurrence appearing after the expiration of a year. The author concludes, therefore, that hereditary syphilis should not be forgotten among the several diseases of an infectious character to which the hyperplastic process of multilocular sclerosis in childhood is to be referred. A. F. C.

Schmitz: Erythema Nodosum Malignum. (*Centr. f. Kinderh.*, April 2, 1887.)

In 1872, Uffelmann reported fourteen, and in 1876 the same author reported three more, cases of an ominous disease of childhood, which located itself in the skin, and had cutaneous symptoms which resembled those of erythema nodosum, though it evidently was not that disease. The fact that there were severe disturbances of the general condition which lasted for weeks or months, the occurrence of the disease in children of tuberculous family history and with a decided scrofulous habit, led Uffelmann to conjecture that he had in hand a disease which was akin to both tuberculosis and erythema nodosum, and this opinion was strengthened by the fact that in three of these cases tuberculosis developed within five years. Oehms strengthened Uffelmann's position by a case which he reported in which acute miliary tuberculosis with fatal issue developed six weeks after the disappearance of a severe attack of erythema nodosum. The author of this paper is not quite satisfied from Uffelmann's description of the general symptoms in his cases that erythema nodosum was present. If one bears in mind that erythema nodosum is not a local affection, but a general one and probably of an infectious nature, it need not cause surprise if it sometimes runs a very severe course, nor that it is especially liable to affect those who are of a scrofulous taint in whom other infectious processes and the acute exanthemata run a relatively severe course. It was also thought that the subsequent occurrence of tuberculosis had nothing especially significant about it, for a great many of the infectious diseases of childhood prepare the way for the development of tuberculosis at a subsequent period. However well or ill grounded Uffelmann's supposition may be as to the existence of a new disease, the author reports three cases which had the symptoms which Uffelmann described, and two of them resulted in tuberculosis. The symptoms, in brief, were a prodromal stage of three or four days, then an eruption upon certain portions of the skin characteristic of erythema nodosum, irregular rise of temperature from 35.1° to 40° C. during the course of the eruption with severe cephalic and gastric phenomena, and symptoms of catarrhal disorder of the respiratory passages, repeated recurrences of the eruption without apparent cause therefor, and prolonged convalescence. The entire duration of the erythematous disorder was three weeks in two of the cases, and six weeks in the other. A. F. C.

Filaton: The Causes of Scarlatinal Nephritis. (*Centr. f. Kinderh.*, May 16, 1887.)

Two forms of nephritis occur with scarlatina,—the catarrhal, which comes at the beginning of the disease, and the parenchymatous, during the stage of desquamation. At the beginning of the disease, the cause of the albuminuria must not be sought in a degeneration of the epithelium of the convoluted tubules, the investigations of Crooke and Polubinski having shown that they are at that time unaltered. In the glomeruli, however, there is an increase in the endothelial nuclei, a loss of epithelium in Bowman's capsule, and an alteration in the lumen of the capillaries. The author does not agree with Bartels, who considers that albuminuria in scarlatina is due to a change in the porosity of the capillary walls in consequence of high temperature. The objection to such a theory is that the duration and degree of elevation of the temperature do not always coincide with the intensity of the albuminuria and the degeneration of the epithelium. In pneumonia there may be high temperature for a long time, but it is not always followed by albuminuria; in diphtheria, on the other hand, the granular degeneration of the parenchymatous organs may occur early and after a slight elevation of temperature. Fever and granular degeneration in febrile diseases are best explained as the result of infectious matter, and when the kidneys are the organs involved in such processes the glomeruli and the contiguous convoluted tubules are the most involved. Polubinski has found micro-organisms in the blood of the capillaries of the glomeruli in scarlatina miliaris, and that as the micro-organisms diminished the albuminuria diminished also. The anatomical changes in secondary nephritis occur gradually, and the difference in the views concerning the pathological anatomy of scarlatinal nephritis may be reconciled by considering the different periods in which the kidneys have been under observation. The author believes that secondary nephritis is of mycotic origin.

A. F. C.

Somma: Primary Diphtheritic Coryza in Children. (*Centr. f. Kinderh.* [abstracted], May 2, 1887.)

As a result of his clinical observation, the author has reached the conclusion that diphtheria is at first a general and then a local affection, which is due to the presence of certain micro-organisms. Therefore primary nasal diphtheria is to be regarded as the clinical expression or localization of a general infection. Those cases in which the local phenomena force the general symptoms into the background are to be explained, on the one hand, by the fact that the power of resistance of the different tissues to the virus is subject to variation, and on the other, that some individuals may either possess no susceptibility or only a slight one to the virus. The false membrane, which is the most definite symptom in primary nasal diphtheria, contains great numbers of both the micrococcus and the bacterium termo. It is identical with the fibrinous membrane which is found in laryngeal croup, except that in the former there is a much larger accumulation of pus-cells. As to the symptomatology of nasal diphtheria, Boeth, Smith, and Monti distinguish two forms, a mild and a severe one, and the diagnosis of the former of these may present not inconsiderable difficulties. A rhinoscopic examination in these cases may be an impossibility, and then the diagnosis must depend upon the findings of the microscope. The differential diagnosis must take into consideration the possible presence of catarrhal rhinitis, subacute purulent nasal catarrh, caseous rhinitis, and hay fever. The prognosis will usually be unfavorable. The course of the disease is acute in most cases, and seldom continues a week. In the early stages of the disease the treatment should consist in the use of a spray of a one-per-cent. solution of salt every half-hour, followed by a spray of a one-per-cent. solution of resorcin. The application of iodoform and salicylic acid may also be beneficial. In the severe forms injections of acetic or lactic acid may be used. The general condition of the system must not be neglected, especially in the severer form. A. F. C.

Acetonuria in Infancy. (Editorial, *Lancet*, September 3, 1887.)

It has been shown by many experimenters that acetone is not a peculiar accompaniment of diabetic coma, but may occur in many diseases, such as fevers, cancer, and insanity.

It seems probable that even in the healthy organism this body, undoubtedly deleterious, may exist with impunity in minute quantities.

Baginsky has shown that this is true in infancy. Pathological acetonuria is common among children suffering from febrile disorders, and bears some relation to the intensity of the febrile process, diminishing as this subsides.

It has been shown that acetonuria is increased by nitrogenous diet, and diminished or disappears altogether by non-nitrogenous diet. It is largely present in convulsions of infancy. It does not seem to be produced by the attending asphyxia, nor can acetonæmia be regarded as a common cause of convulsions, since acetonuria may be absent, and experimentally acetonæmia did not generally cause tonic or clonic spasms.

The source of this body is still obscure, although the weight of evidence seems to point to nitrogenous materials as its origin.

Baginsky found considerable acetone in the urine of a child who had swallowed some dilute nitric acid. Grave symptoms, unconsciousness, delirium, grinding of the teeth, and small pulse were noted as the effect of the intoxication, and the urine contained albumen. Nor was there in this case any considerable rise of temperature,—only 38.2° C. There was, however, much disintegration of nitrogenous materials.

Chemical examination of the contents of the stomach, drawn off by washing, and of the evacuations, failed to detect any appreciable quantities of acetone; its source can hardly be attributed to a functional disturbance of the digestive organs.

Gillet de Grandmont: A Case of Diphtheria transmitted from the Pharynx to the Eye, and from the Eye to the Pharynx. (*Jour. de Méd. de Paris*, May 8, 1887.)

Whether diphtheria of the eye is the same as diphtheria of the throat is a question which has been much discussed, and not yet entirely settled. Two forms of conjunctivitis with the formation of false membrane are recognized. In the first the membrane is slightly resistant, easily detached from the underlying mucous membrane, and possibly separated from it by a thick layer of pus. In the second the false membrane is closely connected with the conjunctiva, and cannot be removed without tearing the conjunctiva. In the first the mucous membrane bleeds at the slightest touch; in the second the conjunctiva has a lardaceous consistency, and loses its vascularity so that it does not bleed even when scarified. The first form is the croupous, which is frequently met with in children suffering from purulent ophthalmia, and is due to exudation of the fibrin out of the vessels; it occurs at the same time with diapedesis of the leucocytes. The second form is diphtheritic ophthalmia, which is apparently of the same nature and the same origin as diphtheria of the pharynx. It develops in the same conditions, causes the same necrosis, presents the same tenacity, and is likewise transmitted by contagion.

While croupous ophthalmia is benign, diphtheritic ophthalmia is equally malignant. The two diseases should therefore be carefully differentiated.

The cases in question occurred in a family in which there were three children, one of whom, a boy five years of age, was suffering from croup with diphtheritic angina when seen by the author. Tracheotomy was performed, but the boy died two days later. The day after the boy was first seen his brother, fifteen months of age, was brought to the author's clinic, having suffered two days with diphtheritic ophthalmia. The lids were much swollen, their internal aspect was gray, infiltrated, very thick, and showed ecchymotic patches surrounded with a grayish exudate, which could not be removed with the forceps. Not a drop of blood could be drawn by scarification. The conjunctiva of the globe was also infiltrated, of a grayish color, streaked with small ecchymoses, but without any purulent secretion. The corneæ were infiltrated, and there was a prospect of a sphacelus which would result in perforation of the cornea and destruction of the globe. The treatment consisted in carefully washing the eyes once in twenty-four hours with equal parts of water and Van Swieten's solution, with instillations of the same into the eyes every two or three hours. After the eyes were washed they were anointed with a mixture of carbolic acid and vaseline, one to three hundred. Eight days after this affection of the eyes began, the child's mother, who was suckling him and also attending to his eyes aside from the daily treatment at the clinic, was seized with diphtheritic angina, the membrane being successfully treated with caustics. These cases, in the author's opinion, furnish strong evidence of the identity of diphtheria of the eyes and diphtheria of the respiratory passages. A. F. C.

Schwimmer: Tuberculosis of the Skin and Mucous Membranes. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], June, 1887.)

The author endeavors to demonstrate that the proposition of Volkmann and Friedländer that lupus is a local tuberculosis of the skin is not absolutely true from a clinical point of view, and that the two processes may be clearly distinguished from each other, notwithstanding the fact that the bacilli of tuberculosis may constantly be found in lupus. The two diseases should be distinctly separated for the following reasons:

(1) True tuberculosis of the skin is very rare, while lupus is relatively frequent. Besides, the mode of development in the two processes differs.

(2) Contrary to lupus, primary tuberculosis is almost ex-

clusively observed upon the mucous membranes, whence it extends to the cutaneous surface.

(3) The lupous and tuberculous dermatoses do not have the same bearing upon the general condition; tuberculosis of the skin is always an indication of an infection of the entire organism, and is always terminated by death, while lupus may persist from childhood to advanced life without causing the development of tuberculosis of the lungs.

(4) The bacilli themselves do not bear the same relations in lupus and in tuberculosis. In the former their number is very limited, in tuberculosis of the skin they are found in large numbers. It is true that there is no morphological difference between the bacillus of lupus and that of tuberculosis, but the same may be said of the bacilli of the two diseases, lepra and syphilis. If the bacillus of lupus were identical with that of tuberculosis, inoculation of tuberculous matter ought to produce lupus. The diseases are, therefore, far from being identical even from a bacteriological stand-point.

A. F. C.

Barrett: Diphtheria Circumscripta, or Sandringham Sore Throat. (*Brit. Med. Jour.*, July 23, 1887.)

From time to time the writer has met with cases of the following description, differing from ordinary diphtheria in the absence of all tendency of the membrane to extend.

The constitutional features do not differ from those of diphtheria as usually met with,—viz., extreme prostration, death by asthenia, often preceded by convulsions; in cases of recovery paralysis frequently was observed as a sequel. The local lesion was a circumscribed and ash-colored slough on one or both tonsils, this remaining almost stationary and forming a centre, from which surrounding structures were invaded by a low form of inflammation which sometimes extended to the angle of the jaw, but no suppuration. In favorable cases resolution took place after the slough separated.

Madden: Overpressure as a Cause of Cerebral Disease in Childhood. (*Brit. Med. Journal*, August 20, 1887.)

Twenty years' experience, with an extensive acquaintance with various hospitals and institutions for children, have convinced the writer of the increasing prevalence of all forms of cerebral and nervous disease in childhood. This is ascribed largely to the increasing educational pressure brought to bear upon young growing children. During the first eight or ten years the education should chiefly, if not exclusively, be moral and physical. The tasks imposed in schools were totally disproportionate to the capacity of the children.

The forms of disease most prevalent are mentioned to be meningitis, cephalitis, headache, sleeplessness, and various neuroses. It was urged that if the state for reasons of public policy demands compulsory education of the poor when they are old enough to be dragged out to school, it should at least afford the means for minimizing the damage done and provide for physical as well as mental training, and see that sufficient food is meanwhile given.

The last point mentioned was heartily endorsed by the gentlemen who discussed the paper.

III.—SURGERY.

Goodhart: The Behavior of Fluid in the Chest, and the Treatment of Empyema, with Especial Reference to the Value of the Removal of Rib.

The writer takes exception to the statement of Fräntzel in *Ziemssen*, that "primary purulent pleuritis is of extremely rare occurrence."

In all effusions into the pleura in children the corpuscular element is large in amount, and the fluid may, although turbid from cells, still be capable of absorption. There are cases of empyema, so called, cured by a single aspiration.

If we expect in children to find dulness, with absence of vocal fremitus and respiration, at the base of the chest and up to a certain well-defined level in every case of effusion in the chest, we will be often misled; while, on the other hand, it is common enough to draw fluid from a part of the chest which is apparently filled with air on inspiration and gives clear resonance on percussion.

The relation of the lung to the fluid in the chest varies with the movements of respiration. The fluid very often acts like a water-bed, the expanding lining displacing it from the contiguous part of the chest and causing its accumulation elsewhere. So, often a comparatively small quantity of fluid covers a large part of the surface of the lung, instead of gravitating to the base as is commonly taught.

Old people use the upper parts of their lungs much more than the bases, consequently the latter parts readily collapse and allow the fluid to accumulate here, this being formed at the same time by the unyielding chest-walls. In young subjects this does not hold.

What happens when an empyema is opened? Not the production of a vacuum by the escape of pus, which is immediately filled with air, any more than the same would occur in the bladder when this is emptied by a catheter. Unless the lung is bound down by old tense adhesions, which is rarely the case in children, it expands a little, the diaphragm rises, the chest-walls fall in, the mediastinum yields, and to some degree the other lung, and in this way the space left by the pus is filled up. It is impossible for the air to enter more than a small space about the opening, which is of no consequence whatever.

The prevailing impression that in empyema there is extensive collapse of the lung, and a large cavity at the base of the chest, to be filled up by granulation, is all wrong. This is only true in long-standing cases, and for those whose previous disease of the lung was the cause of empyema.

The method preferred is, after a free incision to insert a drainage-tube of large calibre, shortened in a week or so so that it merely enters the chest. Of fifty cases so treated in children during the last five or six years, forty-two recovered perfectly, sinuses remained in three, and five died, one from complicating suppurative pericarditis, one from double empyema, a third death was due to foreign body in the branches and septic pneumonia, a fourth to a large collection of pus, which was of eighteen months' standing, death occurring a few days after the operation, the fifth from intercurrent measles complicated by broncho-pneumonia. In three cases only was a part of one rib removed; one healed up well, one has a sinus still, and in a third a small piece was removed because a good-sized drainage-tube could not be inserted.

The operation of rib excision should, in the writer's view, never be done unless the case is one of very long standing, or there is not enough room to put in a proper-sized tube. He never washes out the chest, makes it a point to interfere with the pleura as little as possible, and get rid of the tube as early as possible.

Krakaner, Pauly, and Stoerck: Stenosis of the Trachea after Tracheotomy as the Result of Granulations. (*Centr. f. Kinderh.*, March 19, 1887.)

Troublesome and even dangerous symptoms occasionally result from the free development of granulations after tracheotomy, and previous to the investigations of these three authors the etiology of the subject has been obscure. They have shown that there are two forms of granulation stenosis, one of which occurs a few days after the operation has been performed, the other after a longer period. In the first form the canula cannot be removed, in the second the stenosis is not evident until a long time after the removal of the instrument and the cicatrization of the wound. Pauly, in his paper, described three cases which belonged to the first variety, cricotomy having been performed on account of croup. In one of them scarlet fever was a complication, and the canula could not be removed at the proper time, in the other two the removal of the instrument was too long delayed, the granulations having developed and removal being impossible. In Krakaner's paper a case is described in which the instrument was removed nine days after its introduction. A small fistula was left, which healed under the influence of nitrate of silver. A few weeks later the scar seemed to be developing inward, and formed a tumor as large as a small cherry, covered with mucous membrane, which did not interfere with the movements of respiration. Four other cases of a similar character were reported by Krakaner, in which the phenomena of stenosis did not appear until six weeks or more after the operation. Stoerck approves of the rapid operation of tracheotomy, with only local anæsthesia, as it is frequently performed in France, but he thinks that such cases may offer difficulties as to the removal of the canula, which are greater than are likely to occur if the operation is done more gradually. One of these difficulties consists in the swelling of the laryngeal mucous membrane, and paresis of the laryngeal muscles of inflammatory origin, the other is stenosis of the larynx due to the development of granulations.

With respect to etiology, Pauly believes that this condition may arise in any case in which the swollen condition of the interior of the larynx is not relieved, and the wearing of the canula is a constant source of irritation. Stoerck seems to express the same ideas in other words, believing that the etiological factors are long-continued retention of the canula plus an inflammatory condition of the mucous membrane, the inflammatory process being most intense in that part of the larynx between the vocal cords and the upper border of the canula. Stoerck does not believe that stenosis is due to granulations upon the operation wound, while Pauly does. Laryngoscopic examinations showed Stoerck that the granulations proceeded not infrequently from the posterior wall of the larynx. Changes in the mucous membrane of the larynx might be expected from the fact that the introduction of a canula into the trachea shuts completely away from the air those portions of it which lie just under the glottis. A remedy to this is found in the device of Stoerck, which consists simply in a sieve-like perforation of the convex side of the outer tube opposite the fenestra upon the convex side of the inner tube, thus permitting a free circulation of air. With respect to treatment, the granulations may either be removed through the tube by curetting or cauterization, or, if the tracheal wound is closed, by endolaryngeal treatment or a secondary tracheotomy. Stoerck has recommended intralaryngeal dilatation of the cicatrized larynx, and has devised an instrument for the purpose. Böcker has devised an instrument for endolaryngeal use, which is introduced through the mouth, and rather by a snaring than a curetting movement removes the granulation tumor. The location of the tumor must have been previously ascertained by the use of mirrors, but even with all precautions the operation must be difficult and dangerous and susceptible of successful execution by a very few. A. F. C.

Stoerck: Tubage of the Larynx. (*Centr. f. Kinderh.* [abstracted], April 2, 1887.)

The author recounts the efforts of Bouchut in this direction in the years 1858–60, and then those of O'Dwyer. He has found the tubes useful, but is unable to give positive and definite indications for their use. With the development of laryngoscopy the field of usefulness of O'Dwyer's operation is likely to be greatly enlarged. In the author's experience the tubes were readily borne for hours without bad consequences, the epiglottis performed its functions well, and eating and drinking were not interfered with. The author found little trouble in introducing the tubes, but he devised a forceps for that purpose, which he found more convenient than O'Dwyer's both for introduction and removal, and it is so perforated that it does not tend to interfere with respiration. What result this operation of intubation is to have upon the numerous diseases of the larynx cannot be predicted.

A. F. C.

Olshausen; The Treatment of Umbilical Hernia. (*Centr. f. Kinderh.* [abstracted], April 2, 1887.)

The great danger which this accident entails to those who are the subjects of it has repeatedly called for the exercise of operative interference. The ordinary method of treatment as practised by Breus, Breisky, and others consists in the reduction of the hernia, removal of the sac, and closure of the abdominal cavity with sutures. The principal advantage which the author claims for his method is that the peritoneal portion of the sac is spared; the operation is made an extra-peritoneal one, and the granulations which develop outward from the peritoneum fill the bottom of the wound and tend to prevent a recurrence of the rupture. This operation was first performed upon a female infant with a congenital umbilical hernia. The diameter of the umbilical ring was four and a half centimetres, and the operation was performed three and a half hours after birth. The child was anæsthetized, and antiseptic solutions of boric acid were used for washing the parts, after which an oval incision was made through the skin close to the border line between the skin and the amnion. Then the border of the skin was seized with a forceps, and at the same time the amnion covering the hernia was drawn away from the peritoneal sac. The collections of Wharton's jelly between amnion and peritoneum could not be entirely removed. The umbilical vessels did not bleed, were visible at the border of the sac, and were tied with catgut. Finally, the abdominal wound, six and a half centimetres long, was closed by means of six deep silk sutures and seven superficial catgut ones. The wound was sprinkled with iodoform and covered with carbolized gauze secured by adhesive plaster strips passing around the body. After eleven days the sutures were removed, and two-thirds of the wound were found healed by first intention, the remainder healed firmly by granulations from the peritoneum. The child died of intestinal catarrh half a year later.

This operation is unsuitable for those cases in which adhesions of the liver exist, and which require that the coverings should be divided, the liver-adhesions broken, and then closure of the wound or the removal of the projecting portion of liver, and attempt to obtain healing by suppuration. A. F. C.

Wwedensky and Bereskin: The Present Status of Lithotripsy in Adults and Children. Also a Report of Fifty-nine Cases in which the High Operation for Stone was Performed. (*Centr. f. Kinderh.* [abstracted], May 2, 1887.)

Bereskin gives an analysis of fifty-nine cases in which the high operation for stone was performed upon children in Moscow between the years 1884 and 1886. Of these cases eight were fatal, three of the deaths being attributable to complications,—namely, scarlatina in one after the wound had healed, catarrhal pneumonia in a second, two months after the operation was performed, and dysentery in the third, eighteen days after the operation. In two other cases the operation was followed by suppurative nephritis in one and cystitis in the other. Of the other three fatal cases, one suffered from acute septicæmia and the other two from infiltration of urine with peritonitis. All of the operations were performed with antiseptic precautions, and in most of them the rectum was previously inflated. In twenty cases the wound was closed and a permanent catheter retained from two to seven days. In the thirty-nine other cases drainage-tubes were used in the wound, and this method seemed especially indicated in those cases in which disease of the bladder was present as well as in small children. In three of the cases which were treated without drainage there was a fatal issue, in seven the wound healed completely by first intention; in the remaining ten cases the urine escaped from the wound in the course of two to fourteen days after the operation, but healing resulted eventually. Of the thirty-nine cases which were treated with drainage, five resulted fatally; in two of them the peritoneum had been injured, in one there was no reaction after the operation, and in another death resulted from dysentery. Peritonitis did not occur in any case. Of thirty-three cases in which the patients were under five years of age, seven were fatal; of the remaining twenty-six, in which the age was over five, only one was fatal.

The other author (Wwedensky) is in favor of litholapaxy, since the success of Bigelow's method has been established, and this conclusion in favor of the operation for children is deduced mainly from the results of the operation in adults. It is also supported by the favorable opinion of many authors. Should the stone have a diameter of more than two centimetres, lithotomy may be preferable, as several crushing operations might be required. A. F. C.

Wittelshöfer: The Existence, Significance, and Treatment of Phimosis in Children. (*Centr. f. Kinderh.* [abstracted], May 2, 1887.)

The author reports his observations upon eighteen cases of congenital phimosis which were seen and operated upon during a period of four months. He distinguishes four grades of this lesion: (1) that in which retraction of the prepuce over the glans is possible but very difficult; (2) that in which the end of the glans and the urethral opening alone can be bared; (3) that in which great tension of the foreskin will barely disclose the urethral opening, the uncovering of the glans being impossible; (4) that in which no degree of tension will uncover the slightest portion of the penis, the preputial opening being barely large enough to admit the head of a pin. The most common symptoms are pain in urination, sleeplessness, restlessness, scanty discharge of urine, redness and swelling of the prepuce, eczema of the skin surrounding it, balanitis, and, in the severer cases, progressive inflammation of the urinary passages on account of obstruction.

A causal relation is believed by the author to exist between phimosis and umbilical hernia on the one hand and hydrocele on the other. The most satisfactory method of operation is believed to be that by dorsal incision, which may be done with a sharp-pointed bistoury, or with scissors after the prepuce has been fixed with a clamp or other fixation apparatus. The edges are then to be stitched, and the wound dusted with iodoform, the operation requiring but a few minutes. Slight swelling may persist for several days, but it will always disappear spontaneously. In a few months the prepuce will have entirely assumed the proper shape and appearance.

A. F. C.

Edmund Owen: Notes upon Hare-lip Operations. (*Lancet*, August 20, 1887.)

The dotted lines in the accompanying figures show the direction of the incisions and the manner in which they are united.

FIG. 1.

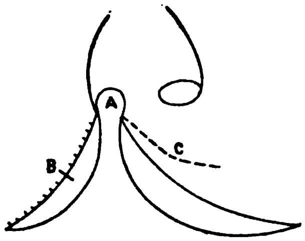
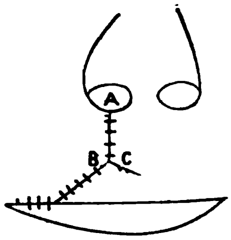


FIG. 2.



Mr. Owen has given up the use of pins altogether: fine silver wire and horse-hair which has been thoroughly carbolized are used in their place. The latter answers especially well for adjusting the mucous membrane.

Attention is called to the fact that the line *a c* is prolonged upwards and outwards through the lip for some distance. Unless this is done, the border of the lip does not lie level and a slight kink results.

Smith and Waldo: The First Cases of Intubation in Europe by O'Dwyer's Method. (*Lancet*, June 18, 1887.)

The first patient was two years and four months old. On admission to the hospital there was marked dyspnœa, which was entirely relieved by the introduction of a tube, and the case recovered. The tube remained in position only thirty-seven hours.

The second case was five years old. Catarrhal symptoms had lasted a week, with hoarseness and gradually increasing dyspnœa. Albumen was found in the urine. Intubation was done to relieve a paroxysm of violent dyspnœa the next day after admission. The tube was expelled thirty-six hours afterwards during a coughing spell, and shortly after it a large piece of membrane was coughed up. So much relief was afforded that reintroduction of the tube was not neccessary, and the case gradually recovered.

The third case terminated fatally. The child was three years old, and the operation was done on the fourth day, with great relief to the dyspnœa. The next morning it was found that the string by which the tube had been fastened to the cheek had been gnawed through and that the end attached to the tube had disappeared. The tube was not found *in either*, and it was concluded it had been swallowed. The dyspnœa returned and a second tube was introduced, expelled by coughing, reintroduced, but death occurred the same day. At the autopsy the swallowed tube was found in the cæcum, whither it had travelled without doing any apparent damage. Death seems to have been caused by extension of the disease into the bronchi; this the reporters "feel bound to attribute to the operation," without any reasons except that the inflammation was most acute above, and gradually diminished downward.

Watson: Tracheotomy and Inflation in the Treatment of a Still-Born Child. (*Lancet*, July 16, 1887.)

In the case reported, all efforts at resuscitation having failed the trachea was opened, a catheter inserted, and an attempt made to inflate the lungs. About a drachm of mucus and meconium was sucked out of the trachea. The child revived and lived twenty-four hours. The autopsy showed that the upper and middle lobes of the right lung fully expanded and a small part of the lower lobe. Only a small patch at the apex and along the freed anterior margin of the left were inflated.

The failure to secure full expansion the writer thinks was due to the fact that it was impossible during the attempts to prevent the escape of air through the mouth and nose, and also by the tracheal wound.

C. E. Jennings commenting on the above in the *Lancet* of July 23, states that asphyxia in the newly born is due to the fact that the epiglottis during inspirating efforts is drawn down like a valve over the superior opening of the larynx. This is the way in which it is usually produced in ether-narcosis, and is to be relieved by drawing the epiglottis forward with a forceps which he has devised for the purpose. [Why the finger will not answer as well we are not informed.]

Sutton: Spina Bifida Occulta and its Relation to Ulcus Perforans and Talipes Varus. (*Lancet*, July 2, 1887.)

The deformity is defined as a defect in the arches of the vertebræ, but without any tumor appearing externally.

Four cases previously published are collected from Virchow and others, and one that came under the personal observation of the writer is added.

In every case the deformity has been accompanied by a luxuriant growth of hair in the lumbar region, and in one case this abnormal hairiness extended all over the body.

Virchow has compared the hairy growth to the tuft of feathers on the head of the Polish fowl, and the underlying cranial defect.

Congenital clubfoot was present in several of the cases, and in three from "perforating ulcer" of the foot. Recklinghausen examined the nerves of one case which underwent amputation, but found no changes. Hypertrophy of the muscular coat of the arteries existed to a considerable degree, and this was also found in the writer's case.

Newbolt: Traumatic Dislocation of the Hip in a Child aged Five Years. (*Lancet*, August 27, 1887.)

The injury was received by a fall from a wagon. The variety was dorsal, and the head of the bone was easily felt. It was easily reduced by manipulation without an anæsthetic about fifteen minutes after the accident. The case is interesting only from its rarity at so early an age.

Street: Intussusception; Abdominal Section; Recovery. (*Brit. Med. Jour.*, April 16, 1887.)

The following is the brief report of the case made to the Cambridge Medical Society. A boy of three years was admitted to the hospital with a history of pain, vomiting, and partial obstruction for four weeks and complete for three weeks. Abdominal section was performed on the day of admission and the intussusception reduced. The patient was discharged from the hospital six weeks afterwards cured, the bowels acting regularly.

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Original Communications.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.*

BY JOHN M. KEATING, M.D.,

AND

WILLIAM A. EDWARDS, M.D.

(Continued from September Number.)

AORTIC DISEASE.

DISEASE of the aortic orifice is relatively less frequent in the child than in the adult; it is also less frequently met with than disease of the auriculo-ventricular orifices.

Aortic insufficiency, arising primarily in infants, is among the uncommon clinical observations, excluding cases having congenital origin; in older children it is not at all rare. The etiology of aortic insufficiency is much the same as we have already considered in treating of the general subject of valvular disease. At this valve, however, we are more likely to

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have an insufficiency suddenly produced during sudden exertion from the rupture of a segment of the valve, occurring usually at the free border, sometimes, however, at the insertion of a leaflet; it is difficult to believe that a healthy valve would rupture under these circumstances, and we must admit the existence of a previous valvular disease, which has weakened its structure.

Endocarditis, sclerotic in structure, is perhaps more often met with at this orifice than in all the others; occasionally the inflammation causes adhesion of one or more leaflets, or a portion of them, to the wall of the vessel. Cases have been noted in which insufficiency was caused by a perforation due to a local valvular aneurism. A large number of cases of aortic disease are secondary to mitral endocarditis, which has extended by continuity and contiguity of structure. In older children the valves may become diseased by an extension of an atheromatous degeneration of the aorta; in other instances insufficiency may be produced by dilatation of the aorta independently entirely of valvular disease. Paul has demonstrated the fact that in youth the semilunar valves have a greater area than is necessary to cover the section of the aorta, but as the aortic orifice enlarges after manhood, while the valves no longer increase in size, the latter finally become smaller than the area of the section of the aorta. Beneke* has made a number of measurements to demonstrate this progressive dilatation of the aorta with age, showing that the aorta gradually increases in size from birth until the age of twenty-one years. The dimensions of the body and of the aorta then remain stationary until the age of forty to forty-five years, after which the relation changes as the aorta increases in size.

The changes thus shown in the heart of a child will throw light upon the fact that a growing heart possesses a certain inherent power to overcome morbid changes which is not seen in the adult, thus rendering the prognosis of cardiac disease in the young much more favorable.

The observations are so interesting and valuable that we append an abstract in tabular form.

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* F. W. Beneke, Ueber das Volumen des Herzens. Cassel, 1879. (Paul.)

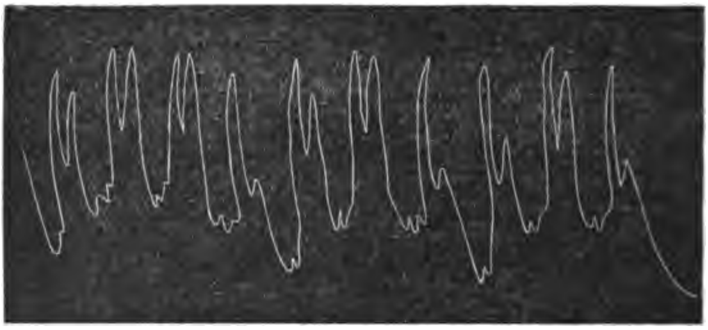
Dimensions of the Circumference of the Aorta at its Origin, according to Age and Sex. Relations of this Quantity to the Length of the Heart (the figure marked indicates the relation of this quantity to one hundred centimetres in length of body).

Age.	Male Sex.				Female Sex.			
	Number of Cases observed.	Internal Circumference of Aorta in Millimetres.	Relation to 100 Centimetres of Length.	Average Length of the Body in Centimetres.	Number of Cases observed.	Internal Circumference of Aorta in Millimetres.	Relation to 100 Centimetres of Length.	Average Length of the Body in Centimetres.
Fœtus	1	9.5	30.6	31.0	...	......	......	......
Fœtus	1	11.0	29.7	37.0	...	......	......	......
Fœtus, six to seven months	1	12.5	30.9	40.5	...	......	......	......
Fœtus, seven months	1	14.0	33.7	41.5	...	......	......	......
Fœtus, seven to eight months	1	13.5	33.7	40.0	...	......	......	......
Fœtus, seven months	...	......	......	......	1	11.0	30.5	36.0
Still-born	6	18.7	37.5	50.0	1	17.5	35.0	50.0
From one to eleven days	4	20.0	39.8	50.4	4	19.0	38.1	50.2
From eleven days to three months	17	23.7	44.2	53.7	14	23.5	42.4	55.4
From three months to one year	10	36.0	48.6	74.0	14	28.3	45.4	62.3
From one to two years	11	33.9	46.9	72.7	9	33.2	44.1	75.4
From two to three years	12	40.0	48.8	82.0	9	34.6	41.5	83.5
From three to four years	4	39.3	42.5	93.1	2	39.3	42.5	93.1
From four to five years	1	38.0	38.0	100.0	4	40.1	41.3	97.0
From five to six years	5	40.3	38.9	103.7	3	40.0	36.4	119.6
From six to seven years	6	43.0	37.0	116.1	2	39.5	40.0	104.5
From seven to nine years	6	46.6	38.3	121.4	3	43.0	35.9	119.5
From ten to eleven years	8	47.3	38.8	122.4	2	44.0	35.1	125.5
From eleven to thirteen years	5	50.8	36.9	137.4	4	48.5	34.8	139.5
From thirteen to fourteen years	4	46.2	32.3	143.5	5	49.6	36.3	136.9
From fourteen to fifteen years	7	49.0	33.9	144.3	3	49.6	33.7	147.3
From fifteen to sixteen years	9	51.9	33.2	157.0	3	56.3	36.9	153.6
From sixteen to seventeen years	3	55.1	35.3	156.6	5	49.6	32.5	152.5
From seventeen to eighteen years	7	53.5	33.1	161.3	5	55.4	34.9	159.0
From eighteen to nineteen years	5	57.8	34.6	166.8	3	53.8	32.3	164.6
From nineteen to twenty years	11	57.8	34.3	168.6	4	53.5	34.1	156.7
From twenty to twenty-one years	3	62.8	36.0	172.0	5	56.2	36.7	156.7

Symptoms and physical signs.—Of all cardiac diseases this is certainly the most easily recognized, both on account of its characteristic general symptoms and the acuteness with which the physical signs are defined.

Corrigan first recognized this fact by describing the "visible pulse," so marked in this disease. The pulse is sudden and bounding, giving an impression of seeming strength, but it is elevated suddenly, and falls immediately. In the words of Corrigan, "the arterial trunks of the head, neck, and upper limbs at once attract the eye by their peculiar pulsations; at each diastole the subclavian, carotid, temporal, humeral, and sometimes even the palmar arteries are projected forcibly from their bed and bound under the skin." In order to better observe these points we are in the habit of having the patient strip one arm and preferably one side of the chest, separating the arm from the body, semiflexing and supinating the forearm; the observer at a glance will be able to note the entire course of the arteries under consideration.

The character of this pulsation is well shown by the cardiograph tracing upon a case, æt. seventeen, with aortic insufficiency. Corrigan's original explanation, which has stood the test of years, cannot be improved upon: "When the semilunar valves are healthy they are closed by the pressure of blood immediately after each ventricular contraction. When the occlusion is complete the blood propelled from the ventricle is retained in the aorta, and the large vessels remain distended. These vessels then maintain almost the same calibre in systole as in diastole. But when the valves no longer close the aortic orifice, a certain amount of blood flows back into the ventricle after each systole; it follows that the ascending aorta and the arteries supplied by it allow a certain amount of the blood contained in them to escape; they become flaccid after each ventricular contraction and their diameter diminishes. At this moment a fresh contraction of the ventricle rapidly forces into the vessels a quantity of blood which dilates them forcibly and suddenly. The arterial diastole is then marked by such a sudden increase in the calibre of the vessel that it produces a visible pulsation, constituting one of the signs of the disease." It is not necessary that the



(From Paul.)

backward flow should be directly into the left ventricle, as in certain congenital cases, in which the flow has been from the aorta to the pulmonary artery by an abnormal communication, or from the aorta to the right ventricle, all the phenomena of aortic valvular insufficiency have been noted. It is necessary and important to bear this in mind when observing young children.

The murmur is heard at the second right costal cartilage, "the aortic cartilage;" it is heard as high as the upper border of the second intercostal space, also slightly to the right of the sternum, and descending downwards throughout the extent of the bone, inclining a little to the left as the ensiform cartilage is approached. The murmur is sometimes heard with maximum intensity opposite the third right costal cartilage. Again this intensity is occasionally best marked at the extreme tip of the sternum, the ensiform cartilage, or xiphoid appendix. The bone, or in the very young the cartilaginous structure, in some cases seems to act as a tuning-fork and amplify the bruit by its vibrations. Aortic insufficiency is accompanied by a murmur which is diastolic in time, replacing the click of the semilunar valves and commencing with the cardiac diastole, consequently occupying the greater portion of the period of silence; it terminates with the diastole, or better the murmur is cut short by the next systole. The systole will be found to be shorter than normal, with a rapid subsidence. As the heart becomes hypertrophied the murmur becomes more distinct and presents greater areas of transmission.

Its character is somewhat superficial, sometimes soft and cooing, at others hard and rasping; it is heard best, as a rule, with the patient standing.

Renaut says that in cases of great insufficiency with an hypertrophied auricle, a sphygmographic tracing of the carotid pulse will show an elevation of the line corresponding to the auricular systole.

The general symptoms in young patients are apt to be latent for a long time, and the sole manifestations are the physical signs. Later, hypertrophy of the left ventricle arises, and the apex becomes lower than normal, producing an epigastric impulse, and displacing the left lobe of the liver downwards.

Potain and Rendu are of the opinion that this pulsation is due to the backward flow of blood, and that it occurs during the diastole; they state that it always precedes the apex-beat.

As the case advances the cardiac chambers become dilated; it is then that we note an increase in the vertical diameter of the heart; the tricuspid may become insufficient by a process of simple dilatation of the orifice. The apex impingement may be less noticeable to the eye, although the hand will appreciate the active and laborious cardiac movements; as the heart hypertrophies it extends downwards and more to the left, becoming more parallel to the anterior chest-wall and burying itself beneath more dense lung-tissue, which prevents the apex-beat from being so well marked.

The patient, if perfectly quiet, will be in comparative comfort, but the slightest exertion will produce palpitation and distress, with a feeling of anxiety and oppression. Dyspnœa becomes an exacting symptom, which muscular exercise or mental worry will increase to apnœa; it is the duty of the physician in these cases to warn the parents or guardians of the necessity of correcting the child in a mild manner, and to especially caution them against the danger of violent whipping or secluding the child in a lonely or dark room; parents should see that these children are not unduly excited by their nurses reciting "ghost stories" or tales of reckless daring, culled from the unfortunately prevalent poor literature of the day. Among the most alarming cases that we have been called upon to treat have been examples of night-horror in young children with valvular disease, whose nurse or elder brother or sister has conned to sleep by some story gleaned from the cheap weekly papers scattered so broadcast throughout our country.

Occasional attacks of angina pectoris may arise, alarming the patient greatly, and introducing a new and serious element in the prognosis.

The natural course of the disease in the young is slow; when dilated hypertrophy arises we then note the symptoms of venous tension, congestion of the portal and pulmonary veins, with œdema of the extremities.

AORTIC STENOSIS.

Unlike the tricuspid valve, the aortic is peculiarly prone to present a double lesion. The disease which crumples and stiffens the leaflets of the semilunar valve almost always renders it also unable to close the opening, so that we clinically often note the association of insufficiency with stenosis or narrowing of the aortic orifice. However, cases do occur in which the systolic stenotic murmur persists alone throughout the case.

Symptoms and physical signs.—From the fact that the lesion is rarely single, but most usually accompanied by a certain degree of insufficiency, thus producing a slight confusion in the diagnosis, we must be on our guard in summing up the case.

When the valve is injured by sudden muscular effort, which, as we before stated, does sometimes occur in the semilunar valves, it is rarely that a stenosis or obstruction is produced, the result usually being an incompetency permitting regurgitation.

Peacock, in 1865, had collected seventeen such cases, four of which were under his observation.

All these cases had previously enjoyed good health, never having had rheumatism or, as far as known, previous cardiac disease. Out of these seventeen cases the aortic valves were injured ten times, mitral four times, tricuspid three times.

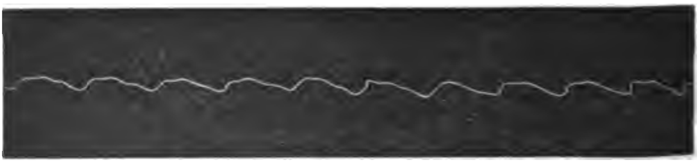
W. L. Axford more recently reports a case of a previously healthy boy who, upon sudden exertion, ruptured the aortic valve, the history being as follows:

J. G., aged sixteen, well developed, while carrying a heavy weight made a sudden and severe muscular effort; soon complained of considerable pain in the centre of the sternum; also of an uncomfortable feeling in the left arm. Expectorated some blood and had a short, dry cough. Before seeking medical advice had been treated for dyspepsia.

His condition soon after the rupture was: Pulse, 100; temperature, 97½°; respiration, 26 and irregular; skin tinged a peculiar brown; complained of a dull, rumbling sound in his ears; urine loaded with urates. Auscultation revealed an aortic regurgitant murmur, partially obscuring and following the second sound of the heart. After treatment for some time the subjective symptoms disappeared, but the murmur was still to be heard. At the present time the boy is up and about, but unable to do manual labor.

The *murmur* produced by stenosis at the aortic orifice is systolic in time, and carried upward to the point at which the aorta becomes most superficial, consequently its maximum intensity is at or a little above the second right costal cartilage, as marked in the diagram. The murmur occurs synchronously with the apex-beat and the carotid pulse. The bruit of an aortic stenosis is perhaps the most widely distributed of all the valvular murmurs; it is carried outwards by the blood-current to the carotids, subclavian, and axillary. In some cases we have heard it in the femoral, and even in the popliteal. Some authors state that they have recognized the murmur even as distant as the dorsalis pedis arteries. They also have a very wide distribution within the chest encasement, as, for example, we have noted them over the sternum, at the apex, over the left lobe of the liver, and in puny, thin children at almost any part of the chest.

The *pulse* in aortic obstruction depends greatly upon the degree of stenosis: small if this is extreme; usually, however, it is full and strong, giving evidence of ventricular hypertrophy, which arises early. Its characters are well illustrated in the accompanying tracing:



Child six years. Aortic stenosis, with autopsy. (Blache.)

It is necessary to differentiate an aortic systolic murmur from a mitral systolic. In order to distinguish them we first locate the point of maximum intensity. Furthermore, the systolic murmurs are rarely of the same timbre and quality. The aortic most usually is the rougher and more accentuated. Again, mitral systolic murmurs are not transmitted into the arterial circulation, but into the axilla.

The effect on the cardiac cavities is much the same as already described for aortic regurgitation, as are the general constitutional symptoms, so that a repetition would be superfluous, particularly as sooner or later the two murmurs will almost always be found to coexist.

DISEASE OF PULMONARY ARTERY VALVES.

Beyond question post-natal disease of the pulmonary valves or orifice is a clinical rarity. We have already considered, at some length, the congenital diseases and defects at this situation; when meeting a murmur whose maximum intensity corresponds to the upper margin of the second left intercostal space, we must first determine whether this is the true primary seat of the disease, remembering how unusual it is to meet a bruit at this point; and furthermore, we must, if possible, determine whether we are dealing with a congenital or an acquired affection, bearing in mind that many competent authorities consider stenosis and atresia of the pulmonary artery and orifice with open septum ventriculorum as the most frequent malformation of the heart; this narrowing is generally best marked at the orifice. It is possible in these cases to maintain life even up to the age of thirty-seven years; we have already reported the case of a man who survived until the age of sixty-six years, so that the physical diagnostician may upon rare occasions meet with either a pulmonary regurgitation or stenotic murmur.

Paul, in 1871, reported an undoubted case of acquired or extra-uterine pulmonary stenosis, and in 1882 Vimont records fifty-two cases of acquired disease of the pulmonary artery, among which are included cases of stenosis and insufficiency. In our own hospital wards we have met one case of ulcerative endocarditis which the post-mortem examination showed was confined entirely to the pulmonary artery valves.

Stenosis of the pulmonary artery valves produces a striking alteration in the cardiac topography. Hypertrophy of the right ventricle arises, which may attain the thickness and capacity of the left ventricle, giving the heart a sac-like shape with two equal-sized cavities; in some instances the right ventricle is much the larger of the two. The pulmonary artery itself will be found to be in a state of dilatation with thinning of the walls; the later stages of the process will, of course, be one of cardiac dilatation, as we have already seen when studying the other murmurs.

According to Paul, the diagnosis of *stenosis* of the pulmonary artery depends upon the following signs: "Measurement of the heart shows depression of the hepatic angle of the cardiac triangle, and consequently a more horizontal position of the lower border. In certain cases palpation may reveal a purring thrill, which is more marked in the second left intercostal space. Auscultation discloses a peculiar blowing murmur. This murmur occupies particularly the left second intercostal space from the sternum to four or five centimetres from the edge of the bone. If the murmur is intense it is transmitted readily by the thickened wall of the ventricle, and then covers the entire anterior surface of the heart; but the maximum intensity remains very distinctly in the second left intercostal space." The murmur is systolic in time just as its analogue at the aortic orifice; it is, perhaps, a little more superficial.

Paul further states that the murmur has its maximum intensity when the patient is auscultated in the recumbent position; it diminishes considerably and sometimes disappears entirely in the sitting posture.

A fact which should be of considerable aid in diagnosing this class of murmurs is the relation which they bear to the respiratory function. As the patient holds his breath the murmur becomes weaker and weaker until during a forced expiration it almost entirely disappears, then allowing the patient to inspire several times and free the pulmonary circulation, the murmur will again return; these characters are said to be extremely well marked in pulmonary stenosis. When the ventricle becomes much hypertrophied the respiratory auscultation is not so characteristic, as the force of gravity will then not overcome the force of the heart; it is now that arrested respiration will cause the murmur to become more plain.

Potain and Rendu state that their patients complained of a sensation of peripheral coldness despite the integrity of the arterial circulation. Paul has failed to note this symptom in his cases who suffered from the acquired variety of the disease, but found it well marked in those cases who presented cyanosis, depending upon congenital defects in the valve and orifice.

Insufficiency of the valves of the pulmonary orifice extra-uterine in origin is beyond all question the rarest form of valvular disease. Its etiology is similar to all other valvular affections.

A consideration of the disorders of the pulmonary orifice and valves would indeed be incomplete without extended reference to the case reported by Bruen* of a young girl who at the age of twenty years presented well-marked signs of cardiac derangements. The patient was a syphilitic, and was under observation from November, 1878, until July, 1882.

Post-mortem.—Heart, left side: Slight ventricular hypertrophy; mitral valves somewhat thickened at the margins, with roughening of their auricular aspect; valves competent; the left auricle is normal, as are also the aorta and the aortic valves.

Right side: Two of the semilunar leaflets at the mouth of the pulmonary artery are nearly destroyed by atheromatous changes, while the third segment is much thickened and projects as a leaf-like fold, roughening the mouth of the pulmonary artery. This vessel is dilated to twice its normal size, forming nearly an aneurismal dilatation; the vessel-walls are covered with a fringe of vegetation, of inflammatory origin, or due to atheromatous changes. The right auricle is very small and imperfectly developed, the bulk of its cavity being formed by the auricular appendix.

The tricuspid valve was much thickened, but appeared to be competent.

An intra-ventricular communication large enough to admit the forefinger was noted directly beneath one of the two tricuspid leaflets; it was lined with endocardium, and must have allowed free interchange of blood between the two ventricles. Walls of right ventricle were thickened and its cavity dilated.

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* Dilatation and Atheroma of the Pulmonary Artery, etc., Dr. E. T. Bruen, Trans. Path. Soc. Phila., 1883, p. 78.

Dr. Bruen's conclusions are as follows: The case well illustrates the fact that an admixture of venous and arterial blood may occur without cyanosis occurring. Pulmonary artery disease is consistent with a fair amount of general health, and compensation by the right heart may occur, just as in cases of aortic disease. In descriptions of pulmonary artery disease attention is called to bronchitis, pneumonia, and hydrothorax as sequential states. In Bruen's case no such complications were present until just before death, when the patient finally succumbed to congestion of the lungs added to the cardiac state.

The aneurism of the pulmonary artery formed a pulsating tumor on the left side of the sternum, between the second and fourth ribs, extending outward from the border of the sternum and including an area covered by a silver dollar. Over the tumor a post-diastolic and a presystolic, bruit-like murmur could be heard at a point between the second and fourth ribs, while close to their junction with the sternum a hoarse systolic murmur could be heard. The bruit was localized; the heart systolic murmur was carried out into the entire arterial system.

Dr. E. O. Shakespeare, remarking upon the specimen, said that he had been struck with one point of great interest in connection with inflammation of the lining coats of the pulmonary artery as evinced by the vegetations. These growths are very rarely found in the venous current; arterial blood seemed a requisite for such diseased action. Evidently the site of the perforation being just below the aortic and pulmonary valves brought about just this necessary prerequisite,—viz., abundance of arterial blood within a vessel which normally carries venous blood.

GENERAL DIAGNOSIS, PROGNOSIS, AND TREATMENT OF VALVULAR DISEASE.

Diagnosis.—In making up our diagnosis of valvular heart-disease it is necessary to proceed in a systematic manner, bearing certain well-established rules in mind. First, we should determine whether there is any actual organic disease present, or if it is not simply a functional disturbance; then we should consider the alterations, if any, in the size or capacity of the cardiac chambers, together with the changes in its walls.

Most important is it to determine the etiology of the lesion. In order to accomplish this desirable object we should carefully inquire into the antecedent history of our patient, noting well the presence or absence of any family predisposition to heart-disease, also the previous history in regard to certain diseases which have a known cardiac tendency, as rheumatism, scarlatina, and morbilli.

The symptoms present, more particularly those indicating interference in the circulation, are to be carefully chronicled. All-important in this respect are the *physical signs*. Indeed, it is a good rule to examine the heart in all cases that consult us. In the physical examination we note,—

1. The position of the apex-beat and the character of the impulse.
2. The contour of the præcordia.
3. The presence or absence of a tactile fremitus or thrill.
4. The percussion outline of cardiac dulness.
5. Auscultation of the heart-sounds over all the different parts of the præcordia, together with the lines of known transmission.
6. The presence or absence of a murmur, together with the characters of such murmur.
7. The condition of the general circulation, the pulse, and the venous system.

We have already indicated the conditions which cause the præcordia to become either retracted or unduly prominent, and those that displace the apex-beat.* We must always bear in mind that in children organic disease, sometimes of a very serious nature, may exist with but few or any signs, and that even the physical signs in the early stages of the process may be ill-defined and difficult to interpret. On the other hand, patients may complain bitterly of cardiac disorder, and present some objective symptoms, but we will be unable to take a more serious view of the case than by considering it one of mere functional disorder.

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* See chapter on "Methods of Study."

Prognosis.—With increasing knowledge in diagnosis our prognosis is becoming much more favorable. Indeed, it seems patent to us that the prognosis in the young is extremely favorable, and even in adults "heart-disease" is not the awe-inspiring death-knell in the public ear that a few short years ago placed it in the popular mind in the same category that "cancer" occupies to-day.

The first question asked by friends and relatives is, What is the danger of sudden death, and is a cure possible?

The probable duration of the case should, if possible, be determined. This, of course, depends greatly upon the seat and extent of the lesions and their concomitants.

Simple roughening of the endocardium is *per se* of little consequence, although it will produce a murmur, if it does not extend and involve the valves, which renders the case more serious, but not of equal gravity in all the valves. For example, sudden death is perhaps most likely to ensue in cases of *aortic regurgitation*, the least likely in *mitral regurgitation*, although it is said to have occurred in rare instances. Cases of aortic obstruction may last for a long time, their main effect being damming back of the blood-current, thus affecting the heart and lungs. Mitral stenosis becomes serious on account of the inability of the auricle to undergo simple hypertrophy, unaccompanied by early dilatation; the lungs are more speedily affected in cases of mitral disease than in any other valvular lesion.

Tricuspid regurgitation is at the same time one of the most distressing and most serious of the valvular disorders; the venous system speedily becomes overloaded and the symptoms exacting. Furthermore, the patient is apt to have multiple cardiac lesions, the tricuspid leak being one of the last of the series. The last hours in the life of a patient with this lesion are among the most trying scenes of a practitioner's experience.

All extensive or double lesions—*i.e.*, obstruction and regurgitation—of course increase the gravity of the prognosis.

A cardinal question in the prognosis, Is valvular disease ever curable? From our own experience we would certainly answer this in the affirmative, as we have met cases in the young in which distinct mitral murmurs due to organic disease have disappeared under our observation, although we do not think that the valve is ever restored to its normal condition. Still, it seems probable that the inflammatory deposits may be partly absorbed or removed after the lapse of several years.

Hypertrophy in the majority of cases is to be considered nature's method of protecting herself, and is not to be interfered with. It alone becomes dangerous when excessive, as it may cause the blood to tear through diseased arteries, or, on the other hand, if the right heart is hypertrophied, the lungs are supplied with an over-abundance of blood, and, per consequence, are constantly in a state of active congestion.

Dilatation of the chambers is always dangerous, and is never to be considered in any light but as one of evil import. Its gravity is in proportion to its degree and its relation to the hypertrophy; if in excess, the prognosis is serious indeed. It appears to us that the degree of dilatation is the keynote of the prognosis. Many cases of sudden death in valvular disease are due to a weak, flabby, dilated heart, which will be found to be in a condition of asystole.

Dilatation adds much to the patient's distress, throwing increased labor upon the circulatory apparatus, and predisposing to local or general dropsy.

Should fatty *degeneration* of the heart-wall arise, sudden death may occur at any time; pericardial adhesions tend to set this change on foot, and hence should be considered in making up our prognosis.

A summing up of all *symptoms* present will throw considerable light upon the case; for instance, great irregularity or intermittency in the heart's action, serious interference in the venous circulation, dropsies, apoplectiform or epileptiform seizures, render the outlook somewhat alarming, remembering, however, that patients often survive a long time after being "water-logged;" the intervention of pulmonary disorders will cause serious symptoms to arise, also increasing the existing dropsy or causing a general anasarca, all of which may subside with the subsidence of the lung-symptoms. In all cases we must carefully investigate the condition of the kidneys, lungs, and arteries, as upon their integrity to a great extent depends the prognosis. To conclude, then, it is only in the young that curative changes can be expected, and then only under the most favorable conditions: they must lead a quiet, tranquil existence without worry or excitement, and be provided with a suitable diet, sufficient hours for rest, and the avoidance of all injurious habits.

Sir Andrew Clark, at the last meeting of the British Medical Association, remarked so pertinently upon prognosis of valvular disease:

"A lad, æt. sixteen, with an enlarged heart, loud systolic bruit in the mitral area. There was a direct and a regurgitant aortic murmur; impulse of heart was diffuse and heavy. The cervical veins were rather full, and the pulse was somewhat jerking and collapsing. The boy said he suffered nothing, but felt quite well. The family had been told that he was the subject of grave heart-disease, and the consultation had been sought for merely to ascertain by what means his life could be prolonged as much as possible. They were advised to follow out their intention of giving the lad a university education, which they did. This was fifteen years ago, and now the subject of the consultation is the incumbent of one of the largest parishes in England, and continues to pursue an active, useful, and comfortable life."

Sir Andrew Clark expresses himself to the effect that organic murmurs of the heart, although firmly established and lasting for some years, may eventually disappear, and cites several cases illustrating the fact. What are the conditions which justify a favorable prognosis in a given case of valvular heart-lesion? "According to the author, they are the following: (*a*) good general health; (*b*) proper habits of living; (*c*) no essential liability to rheumatic or catarrhal affections; (*d*) an origin of the valvular lesion independent of degeneration; (*e*) an existence of the valvular lesion for over three years without change; (*f*) sound ventricles of moderate frequency and general regularity of action; (*g*) sound arteries, with a normal amount of blood and tension in the smaller vessels; (*h*) a free course of the blood through the cervical veins; (*i*) freedom from pulmonary, hepatic, or renal congestion." To these must be added obedience to properly adjusted rules of health, which, however, need not interfere with the performance of the usual duties of life. The author sums up as follows: 1. "There are many persons with long-standing disease of the heart engaged in the active business of life, who, without any symptom of heart-disorder, have enjoyed good health and have reached an advanced age. 2. The mitral regurgitant murmurs so often encountered in chorea disappear for the most part within eight or nine years of the attack. 3. Valvular inflammations and their effects arising in the course of rheumatic fever do sometimes disappear and leave behind no clinical evidence of their former existence; this occurs, for the most part, in the young, but also sometimes in the middle-aged. 4. The signs of valvular defects arising out of degenerative changes of middle life do also, on rare occasions, disappear, and, when circulatory and respiratory disturbances accompany their beginning, they sometimes subside and admit of apparently complete readjustment. 5. As there must be, in the histories, habits, occupation, and surroundings of patients with valvular disease, conditions which in one case bring about secondary disorders, and in another exempt from them, these differences should be searched for and made capable of application in practice." *

Francis † relates the case of a boy æt. seventeen, attacked by rheumatic fever followed by adherent pericardium, who has lived by following the rules required to promote this condition to the age of sixty-three and is now well.

He epitomizes the rules for living as follows: 1. Rational living. 2. Drinking but little. 3. Avoiding alcohol altogether, as it causes muscular debility and promotes fatty degeneration.

Treatment.—Very seldom can the physician cure disease; at best he can simply guide the case to either a happy termination or through the various stages that inevitably end in dissolution. In chronic or subacute cardiac disorder we may undoubtedly prolong life, render the patient much more comfortable, and in many instances protect him from unpleasant or dangerous symptoms, which, should they arise, will be greatly relieved by judicious treatment. Parents should appreciate the necessity of children with damaged valves being constantly under medical supervision, although it is not necessary for them to be constantly under the influence of drugs.

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* N. Y. Med. Jour., March 12, 1887.

† British Med. Jour., April 2, 1887, p. 725.

At the outset a plan of living should be laid down and rigidly adhered to; all laborious occupations must be given up, severe exercise, particularly such as involves a sudden output of energy, must be looked upon as the most hazardous stimulation that the circulation can be subjected to; indeed, we have seen the most decided and permanent benefit follow complete and absolute rest enforced for some time. Let us not, however, err upon the side of too little exercise, as many cases are much benefited by an open-air existence, with moderate walking and carriage-riding. This question of the amount of exercise must be determined for each particular case by the medical attendant, always bearing in mind that in proportion to the degree of dilatation or degeneration present is the capacity for exertion diminished. Loomis very aptly remarks that in aortic incompetence patients in sleeping should assume as nearly as possible a horizontal posture; by lying on their backs they lower the height of the distending column of blood, and thus relieve both the cardiac circulation and the tendency to pulmonary congestion. It is of paramount importance that the mental faculties should be as little disturbed or worried as possible; we would sound a note of warning in regard to excessive study, long hours in school, with but little or any ventilation, together with a stooping and cramped position at the desk.

These patients must be warmly clad, but care is to be taken that there is no constriction about the neck or chest of the growing child; impress upon the mother the necessity of postponing the adoption of the corset for her daughter just as long as possible, also the danger of late hours and the abuse of tea or coffee. Boys must not be permitted to use tobacco in any form, and as they grow older the danger of venereal excesses should be presented to them.

Occasionally we will meet cases which simply cannot exist in the particular climate in which their lot has been cast; then will the change to a fairly warm and bracing climate often prove of extreme and permanent benefit. Such a climate, for instance, is offered by Southern California all the year round, or extreme South Central Florida during ordinary winters, the Bahamas, Cuba, or among those not so far south, Thomasville, Georgia, and Asheville, North Carolina.

Sponging the skin with cold or tepid water will often result in much benefit and comfort. This may either be applied at home or, if the patient is of the wealthier class, a winter visit to some of the many springs in either our own Southern or Western United States or the more elaborate and elegant establishments of Europe, particularly the baths of Southern France, to which we have elsewhere called attention.

Virginia seems particularly rich in mineral springs: more than fifty are places of resort and fashion, and over twenty are used commercially. West Virginia presents two well-known and much-used spring resorts: the Berkeley Springs is one of the oldest resorts in the United States, having been laid out in 1777, and the White Sulphur Springs have been used medicinally since 1778. North Carolina presents quite a number of hot springs, one of which reaches a temperature of 117° F.,—that is, the Warm Springs of Madison County,—which are used as a resort. Georgia as yet has not developed to any great extent her natural springs. Florida is notable for the great size of her springs, but little literature is available upon the subject, and few analyses have been made; most of them are thermal springs.

Utah, Colorado, New Mexico, California, Oregon, and Alaska present many beautiful and health-giving springs, which space forbids us to mention more fully.

The *diet*, the *digestive* organs, and the large abdominal glands must ever and always receive a considerable share of our attention. Gastric or intestinal dyspepsia will render the patient extremely uncomfortable by the attendant flatulence, which offers a mechanical interference to the heart's action. In a general way a very nutritious, easily digestible diet, containing abundance of protein, will throw the least strain upon the heart, and most easily nourish the patient. Milk and cream should be a constant element in this dietary. Alcohol is contraindicated as an article of diet, and is only to be used as a medicine under the advice of the physician, and then only when definite symptoms call for its exhibition. Sugar, sweet vegetables, and animal fat must be used in moderation. Constitutional diatheses, if they exist, are to be corrected in so far as our means will allow, particularly the rheumatic and syphilitic.

In all cases of cardiac disease the blood should be examined by the hæmacytometer, a study made of its hæmic unit, together with the condition of the corpuscles, as frequently the most marked benefit will arise from the administration of agents to correct the alteration of the blood-crasis.

Drugs, or medicinal agents.—Digitalis, of course, is the first in the category. It is unnecessary for us to dwell upon the effects of the drug, as they are a matter of every-day experience to all who in any way have to do with the sick.

Digitalis is almost a specific in those cases presenting rapid, irregular, or embarrassed cardiac action, with a weak, compressible pulse. Under its action the heart-beat becomes regular, calm, and efficient; the pulse becomes at the same time slower, stronger, fuller, and more regular. Intermittency has by some been considered a contraindication for the administration of digitalis; but our own experience has agreed with that of Fothergill, who is of the opinion that this very condition often demands an increase in the dose. If, of course, the drug appears to produce this condition, its discontinuance at once is imperative.

Under the use of the drug the urine will increase in quantity. This increase, according to Ringer, is more marked if dropsy is present. Diminution in quantity passed is an indication for discontinuing the medicine. Digitalis does not invariably reduce cardiac dropsy; but usually, however, its effects are most happy.

Digitalis is stated by many to have a cumulative action, thus causing toxic symptoms to arise suddenly. We must confess, however, after a somewhat extended experience with the drug, that we have never experienced this action. Osler has arrived at a similar opinion from deductions of a large series of cases in his practice. Böhm,* however, reports a fatal case of digitalis-poisoning in a girl who died suddenly on attempting to get out of bed. Let us review for a moment cases in which the drug is either indicated or, on the contrary, is contraindicated. Simple hypertrophy of the left ventricle is a distinct contraindication, except when the hypertrophy is insufficient to compensate the dilatation. Great care is to be then used in its administration. Should the observer incorrectly interpret the amount of dilatation and overestimate it, giving the drug in proportion to his idea of this dilatation, disastrous results may speedily follow.

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* Bartholow, Med. News, April 28, 1887.

It is in cases of mitral regurgitation that the drug plays its most important rôle, the heart's action being rendered more regular. The musculi papillares consequently act with more determination and regularity, and in this way is corrected an active element in mitral insufficiency, as undoubtedly irregular action of the papillary muscles does much to assist in the already imperfect action of the valve. The general and pulmonary symptoms attendant upon the lesion will also be greatly relieved.

In mitral stenosis we would exhibit the drug only with extreme care, and in cases which can be under our almost daily supervision.

Again, in aortic disease digitalis must be used intelligently, recognizing that the state of the ventricle must be accurately determined before its administration. In tricuspid disease and affections of the right heart digitalis accomplishes but little except correcting the irregularity in the systoles.

Fatty degeneration of the heart-muscle requires extreme caution in the use of digitalis, as does also atheroma, if at all extensive; in bronchitic attacks of cardiac origin digitalis will often prove almost a specific, particularly if associated with strychnia.

It is not our province to dwell upon the various preparations of the drug; suffice it to say that in many cases in children's practice we obtain the best results from the fresh infusion, combined with either tr. cardam. comp., or an alcoholic extract of the fresh bruised seeds of cardamom.

Within the last few years many new drugs and preparations have been added to our armamentarium, some of which have maintained their place in our lists, others being doomed to a short career, failing in the practical trial of bedside utility.

Strophanthus has by many competent observers been placed as an equal to or even a peer of digitalis. Fraser,* of Edinburgh, was the first to introduce it and recommend it to the profession. Upon our own side of the world Dana and Smith, of New York, report favorable results from the use of strophanthus hispidus.

Dr. Emil Pins,† of Vienna, in the June and July, 1887, numbers of the *Therapeutische Monatshefte*, also reports clinical observations in its favor.

Fraser and Brunton show by their studies that this drug is nearly identical with digitalis in its action on the heart and blood-vessels, and in its influence on the secretion of urine.

Pins has found that the tincture of the seeds acts admirably in those cases of cardiac failure depending more particularly on valvular disease, and produced the most desirable results when the lesions caused dropsy and consequent need of increased renal action. Under the use of strophanthus the pulse, heretofore weak, rapid, irregular, and flurried, became slower and more powerful, while the anasarca steadily decreased. In cardiac dyspnœa, both direct and indirect in its causation, it relieved the patient, and in every way proved itself to be the equal of digitalis.

J. Higham Hill ‡ has found the tincture of strophanthus of great value in a case of mitral disease; under its use the pulse became slower, fuller, and much stronger; the renal secretion increased in three days from thirty ounces to eighty ounces; it was used in five-minim doses in half an ounce of water three times a day. Francis § also speaks highly of its value.

Strophanthus is a powerful muscle-poison, increasing the contractile power of all striped muscles, and rendering their contractility more complete and prolonged; as a result of this action on the muscles the heart is early and markedly affected; the heart receives at once a larger quantity than any other muscle in the body; consequently its action on the heart is first made evident, so that by regulating the dose a powerful effect may be produced upon the heart, leaving the other muscles unaffected.

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* Brit. Med. Journ., Nov. 14, 1885.

† Med. News, Aug. 13, 1887.

‡ Brit. Med. Jour., April 2, 1887.

§ Ibid.

Fraser's experiments show that strophanthus exerts a more powerful action on the heart and a less powerful action on the blood-vessels than digitalis. In this it possesses a decided advantage over the latter drug.

Bartholow* suggests trinitrin (nitroglycerin) and arsenic with a strictly regulated diet for those cases of heart-disease in which the muscle has been altered, fatty heart or weak heart, the cavities commencing to dilate and the patient experiencing attacks of angina or pseudo-angina.

Trinitrin may be given in drop doses of a one-per-cent. solution, increased by one drop until the characteristic effects are produced. Some cases are readily affected, others requiring a commencing dose of from five to ten drops. The drug may be given in tablets, which is a very acceptable form.

Bartholow considers nitroglycerin to possess the following advantages:

1. It lowers the vascular tension by dilating the arterioles. 2. It increases the rate of the heart's movements. 3. It lessens the irritability of the nervous system, which finds expression in spasms, especially of the nervous system of organic life; the arterioles of the cardiac muscle under these circumstances receive, of course, more blood, and per consequence nutrition is increased.

He is in the habit of combining with trinitrin the arseniate of soda or Fowler's solution, and is firmly of the opinion that incompetence of the valves caused by yielding of the weakened walls of the heart may be recovered from entirely under the influence of these remedial measures combined with a proper diet and exercise.

Da Costa† speaks favorably of adonidine in one-tenth grain doses, considering that its powers as a heart-tonic are not inferior to digitalis, while it is free from the disturbing effects of the latter; he concludes as follows:

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* Med. News, April 23, 1887. † Med. Times, May 28, 1887.

"There are so many claims made in favor of new drugs, and especially heart-tonics, that it makes one suspicious of them all; but having used adonidine for some time, I consider it a valuable addition to our therapeutics of heart-affections, and have not observed from it anything resembling the cumulative effect which at times, though rarely, follows the administration of digitalis. In this case the contractions of the heart, while they became more regular, were reduced to fifty-six per minute. He had slight vertigo and headache, which disappeared upon resuming the infusion of digitalis, while the adonidine was continued. This drug will never supersede digitalis in the treatment of cardiac dropsy, from its want of diuretic action, but in other cases this might prove a decided advantage. Without discussing the effects of the agent upon the cardiac dilatation and hypertrophy, and merely referring you to the relief from the dyspnœa and the increase in the strength of the pulse, I point out to you that all this was associated with a very considerable amount of cardiac dilatation or stretching, with very little hypertrophy. There is another patient in the ward with very decided hypertrophy in whom the adonidine produced disagreeable results: the heart's action became intensified, and attacks of palpitation came on upon slight exertion. I recall another case in private practice where the same result occurred: the heart was strengthened too much. This all shows that it is a decided heart-tonic, and also indicates its line of usefulness. In a given case of weak and disordered circulation, the nearer it approaches a condition of dilated heart the more benefit from the adonidine; the more it approximates hypertrophy and over-action of the heart, the more is this agent contraindicated. In cases of weak digestion with weak heart, it is especially suitable."

The fruit of the kola-tree, the kola nut, contains about two per cent. of caffeine, but the action of kola seems to be different from pure caffeine.

"Its principal therapeutic application seems to be in cases of diminished renal secretion in cases of heart-disease, and Monnet refers to a number of instances in which the administration of this drug increased the general blood-flow and vascular tension, and so promoted diuresis. In some patients the urinary secretion was increased from a pint a day to two and one-half and even three quarts. In such cases not only does the increased diuresis tend to remove dropsy which may be a sequence of the heart-disease, but the nutritive and tonic principles contained in it also serve to render it a general tissue-stimulant. Kola also seems to lessen the irritability of the nervous system."

Pribam and Piering* have studied the value of agaricine in reducing perspiration in several cases of heart-disease; the administration of the drug in one-twelfth grain, in pill form, almost always proved efficacious.

Chloride of barium, in one-sixth-grain doses night and morning, raises arterial tension and thus acts as a diuretic.

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* Zeitsch. für Therap., March 15, 1885.

SPARTEINE.—Lauggaard reports the following formulæ, which he found useful in eighteen cases of heart-disease:

℞ Spartëine sulph., gr. vi;
Pulv. rad. liquirit.,
Succ. liquiritæ, āā q. s. M.
Ft. pil. No. 20.
S.—One or two pills, two to four times daily.

℞ Spartëine sulph., gr. iii to vii;
Aq. destil., fʒiiss. M.

S.—Twenty drops, from two to four times daily, in sweetened water or wine.

℞ Spartëine sulph., gr. iii to vii;
Syr. aurant. cort., f℥i, fʒivss. M.
S.—ʒi in water, two to four times a day.

—*Therapeutische Monatshefte*, June, 1887.

Citrate of caffeine: Jaccoud,—

℞ Caffeine, gr. c;
Sod. benzoat., ʒii;
Aq. destil., f℥viii.

He prescribes from three to six grains in twenty-four hours.

Tauret gives the following formulæ for hypodermic use:

℞ Caffeine, gr. xxxv;
Sodii benzoat., gr. xv;
Aq. destil., fʒii¼.
Also,
Caffeine, ʒi;
Sod. salicylat., gr. xlv;
Aq. destil., ʒii¼.

—*L'Annèe Mèdicale*, 1887.

Oliver * has administered barium in cases of aortic regurgitation, and noted a reduction in the pulse-rate, which was also rendered fuller and firmer, at the same time the amount of urine was increased.

Aconite and belladonna have powerful and beneficial action in calming the heart when its action is tumultuous and excited; veratria, caffeine, and strychnia are all valuable to fulfil special indications. Convallaria maidis for a time attracted great attention; its tincture in large doses appears to be a true heart-tonic; in no way, however, does it compare with digitalis. Bromide of potassium in certain cases is very beneficial,—in small doses it slows the circulation and allows the heart to establish its equilibrium; it is particularly applicable in cases of fatty heart.

The question now arises as to whether we have any means at our command to cure the cardiac disorder. It is a waste of time to attempt to influence valvular disease by any therapeutic measures; we must simply encourage hypertrophy up to a certain point and then direct our attention to the dilatation, if possible not allowing it to overcome the former condition.

Palpitations, cardiac distress, and dragging, angina or pseudo-angina, may often be relieved by the application of a belladonna plaster to the entire præcordia; a freshly-made belladonna ointment is sometimes more serviceable.

Dyspnœa and asystole may be combated by capsules of ether or by its inhalation; nitrite of amyl is often of extreme benefit in advanced cases.

Alcohol in some of its many forms will prove a valuable stimulant to the circulation and respiration.

Cases of dyspnœa combined with definite pulmonary symptoms are much relieved by a combination of digitalis and tincture of nux vomica. Position will do much to relieve this distressing symptom; proper treatment and a healthy condition of the gastric intestinal tract will also do much to add to the patient's comfort and well-being.

Hæmoptysis must not always be looked upon as a serious symptom, as in many cases it proves to be of extreme benefit;

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* Lancet, July 30, 1887.

if the loss of blood is not sufficient to do the patient an injury, it is well to allow nature to take its course unaided by any therapeutic agents. In cases of over-distention of the right chambers, it is often advisable to practise venesection, cupping, or the application of leeches before resorting to these measures. We must remember that anæmia may be produced by our meddlesome practice, consequently we should well consider all aspects of the case before removing any blood; dry cupping, hot stupes, or fomentations containing turpentine or sinapisms will ofttimes tide a case over a dangerous period.

Sooner or later anasarca or dropsy will arise in most all cases of heart-disease, and is to be combated first by digitalis, which acting upon the heart will increase arterial tension in the kidneys and thus spur them on; diuretics and purgatives are also to be resorted to. In cases that can stand them, Turkish baths will be of inestimable benefit; Roberts advises local baths to the extremities, wrapping the legs up in warm fomentations along their whole extent and covering them with mackintosh. The skin may be used as an eliminate by the administration of jaborandi or pilocarpine; Hay's method of administering concentrated draughts of sulphate of magnesia upon an empty stomach is often followed by marked improvement; some cases, however, will not tolerate the remedy, it should then be at once abandoned, as disastrous results may result in its perseverance. The removal of local effusions, as hydrothorax and abdominal dropsy, has been considered earlier in the work.

Insomnia in advanced cases becomes a wearying and exhausting symptom, and one that will tax the attendant's skill to overcome; opiates, chloral, and bromides are dangerous on account of the condition of the heart; furthermore, they induce a condition during which the voluntary efforts necessary to carry on respiration may cease; still in most cases we must at some time have recourse to these drugs, always, however, recognizing their dangerous character.

Two new and reliable drugs have, however, been added to our list for the treatment of the insomnia of heart-disease, paraldehyde and urethran,—the former in doses of four to eight minims, the latter in doses of three grains and upwards.

The former is somewhat unpleasant to the taste; the latter is probably the best, as it sometimes produces a calm, restful sleep when opium has failed, and when chloral is contraindicated on account of the condition of the heart.

Frequent examinations should be made of lungs, kidneys, and liver, as these organs invariably present sequential lesions.

In conclusion, we repeat Finny's* deductions from a number of carefully studied cases of heart-disease: 1. That too much dependence is not to be placed on the presence of the physical signs of mitral regurgitation as evidence of organic disease. 2. That such signs may be due to purely functional derangement and weakness of the heart, or to an altered condition of the blood. 3. That blood-murmurs produced in the heart and large vessels may be louder than the murmurs due to valvular lesions. 4. That the danger of valvular diseases is enormously increased by, if not directly due to, weakness of the cardiac walls. 5. That increased action and force of the ventricular contraction in the presence of valvular disease is not to be considered a disease, but rather a symptom of disease, and is directly proportionate to the amount of regurgitation or obstruction. 6. That mitral regurgitation is not to be considered in the light of a "safety-valve function" in cases of aortic obstruction, but as an element of increased danger to life. 7. That lowering treatment of the heart's force is rarely, if ever, required in disease of the organ. 8. That indications for treatment in diseases of the heart should be sought from the evidence of the condition of the muscle of the heart, and not that of the valves.

NOTE.—It is to be understood that the doses suggested are for an individual of about the age of fifteen years. In graduating the dose for a younger child it is well to use the well-known formula of adding twelve to the age and dividing by the age of the patient; for example, let us suppose that the dose of say carbonate of ammonia for an adult is five grains, what will be the dose for a child æt. three? $12 + 3 = 15$,—$\frac{3}{15}$ of the ordinary dose, or, reducing the fraction to its lowest denomination, $\frac{1}{5}$, and as the adult dose was five grains, that for a child æt. three will be one-fifth as much, or one grain.

(To be continued.)

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* Dublin Journal Med. Sci., February, 1883.

POST-SCARLATINAL NEPHRITIS.

BY JAMES BARR, M.D.,
Physician Northern Hospital, etc., Liverpool.

(Concluded from page 529.)

FOR convenience we may describe the treatment, first, during the first week or ten days, when the inflammation is active and advancing; and, secondly, during the subsequent period. During the first period, whatever be the severity of the case, or the age or condition of the patient, he should at once be sent to bed and placed between blankets, the action of the skin if possible restored, the alvine secretions freely evacuated, but without any active purgation, and he should be placed on a low non-nitrogenous almost starvation diet. A little arrowroot or other starchy food with a moderate allowance of barley-water or Imperial to allay thirst.

Our first duty is to control the inflammation of the kidneys. To effect this purpose in the case of adults I hold blood-letting in high estimation, but I never venesect children of tender years. Their circulation is readily brought under control without any such heroic measures. Dry and wet cupping over the loins may be used in the case of elder children with advantage, if adopted in the commencement of the disease. There is a vascular connection between the skin and kidneys, through the lumbar and lower intercostal arteries, hence wet and dry cupping over the loins may have a more direct effect on the kidneys than venesection; but these remedies can only modify the circulation in the kidneys in the early stage of the disease when the blood is *circulating*, and not when it is almost stationary. In my opinion, if we are to use depletion, whether local or general, we should do so at the earliest possible period of the disease. There is not much use in drawing blood from a pneumonic patient when the lung is in a state of red hepatization. So with the kidneys, when the tubules are choked up with desquamated epithelium and the blood is stagnant in the vessels, you may deplete the patient by local cupping and phlebotomy, but you certainly will not deplete the kidneys. You cannot arrest an inflammation which has, perhaps, reached its final stage; and there is then no use in weakening the patient by the abstraction of blood which he will require for the resolution of the kidneys and for his own restoration to health. In short, if you do not deplete within the first few days, you had better not do so at all. Dry cupping, however, may be used over the loins at almost any stage of the disease; and, by diverting the blood from the kidneys into different channels, it has often a very beneficial effect. General blood-letting should never be adopted except in the case of strong, healthy adults, and in an early stage of the disease. The early abstraction of blood has, as is well known, a remarkable effect in modifying the course of inflammation, and, if had recourse to during the stage of active hyperæmia, may almost arrest the process before much damage is done. If the urine be bloody, do not check this natural means of cure by plying the patient with gallic acid (a doubtful remedy in any stage of the disease), but try and divert the blood into other channels by cupping and hot moist applications over the loins.

Next to blood-letting antimony is the most valuable vascular depressant which we possess. The dose should be moderately large, which, of course, must depend on the age and strength of the patient and the effect produced. It lowers the arterial tension, lessens the violence of the heart's action, is an excellent diaphoretic, and is said to largely increase the excretion of urea. It may be combined with benzoate of ammonia, especially if there be any uræmic symptoms, and the salts of potassium, such as the citrate and bicarbonate, which lower arterial tension and lessen the acidity of the urine, thus making it more bland and less irritating. If the antimony become too depressing it must be lessened or stopped.

It is most important that free action of the skin should be established and maintained to relieve the kidneys and other internal organs, by determining the blood to the surface and getting rid of waste products. The emunctory function of the skin is great and offers the best substitute for inactive kidneys. When the skin has been thoroughly cleansed, I prefer maintaining free perspiration by hot air rather than by warm water-baths. If there be much febrile disturbance then the wet pack is to be preferred. Sweating must not be carried to the extent of seriously depressing the vitality of the patient. I quite agree with Dr. Howship Dickinson,* that "much mischief has probably been done by purging and sweating, though in moderate measure and in due place these means of elimination are not less than invaluable."

Purgation.—The bowels should be well unloaded at first with a cholagogue cathartic, and afterwards there should be one or two free evacuations daily, but I am strongly adverse to very active purgation. I again agree with Dr. Dickinson, that "hydragogue purgatives and vapor-baths, however necessary when uræmia is pressing, must be used cautiously, as tending to divert the water which is wanted for washing out the uriniferous tubules. The repeated use of hydragogue purgatives should be limited to obstinate and hopeless cases."

Diuretics.—We should endeavor to establish the function of the kidneys as soon as possible, for at the best the skin and bowels are poor substitutes. As long as the inflammatory process is active the urine will be scanty, and there is little use in giving remedies specially intended to increase it. We should now content ourselves with such mild diuretics as benzoate of ammonia, the acetate, citrate, bicarbonate, or acid tartrate of potassium. We should also limit the amount of fluid imbibed until the kidneys begin to act.

Diet.—The diet should be very scanty and non-nitrogenous. The kidneys are the chief organs for removing nitrogenous waste products, and in their present condition they are incapable of eliminating the effete material from tissue metamorphoses without our further increasing their work by the nature of the diet supplied. The diet therefore should simply consist of carbohydrates, such as arrowroot, rice, sago, semolina, tapioca, corn-flour, etc., and ripe fruit. These starchy foods can be made sufficiently palatable by the addition of sugar or maltine, without the use of any milk in their preparation. If the case be a mild one, and a fair amount of urea excreted, you may add a little peptonized milk or chicken-broth.

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* Pathology and Treatment of Albuminuria, second edit., p. 115.

We have now to consider the treatment of the complications or concomitant symptoms which occur during the early stage of the disease, such as vomiting, uræmic convulsions, dropsy with serous effusion.

Vomiting is often an early and very troublesome symptom. At the commencement it may be of a purely reflex origin, but in a short time it becomes evident that effete materials are being thus eliminated from the blood. The ejected matters are usually intensely acid and bile-tinged, and the odor of the breath may be exceedingly offensive. Some recommend that this vomiting should be encouraged by large drinks of warm water as a natural means of eliminating urea, but this advice may readily be carried too far, owing to the great liability of convulsions to follow the exhaustion of vomiting. It has no doubt the additional advantage of rejecting unsuitable articles of diet; and even the milk, which is often injudiciously administered in large quantities at this stage of the disease, is brought up in large, dense, tough, indigestible curds. It is better, however, to regulate the diet so that the stomach may not have this unnecessary trouble. The stomach had better be emptied, the bowels unloaded, and the excessive vomiting checked by sinapisms to the epigastrium, and such remedies as bismuth, bicarbonate of potassium, creasote, or small doses of hydrocyanic acid; ice or a little iced champagne may be ordered if necessary.

Uræmic Convulsions.—With a little chloroform we can quickly bring a fit to a termination; but in order to prevent any recurrence, the best remedy in my experience is benzoate of ammonia. It is probable that the benzoate of soda might have a similar effect, but I have had such excellent success with the ammonia salt that I feel quite satisfied with it. It should be given in large hourly doses for the first few hours, when the frequency of administration may be lessened. It is a cholagogue and diuretic, and may be combined with bromide of potassium or ammonium, liquor ammonium acetatis or citratis, acetate or citrate of potassium, etc. Dr. Garrod has shown* that benzoic acid and its compounds are not only discharged in the urine as hippuric acid, but they also convert uric into hippuric acid. Benzoate of ammonia has a powerful action on the liver, and Dr. Noel Paton has recently* shown that cholagogues have also a powerful action in the formation of urea.

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* Lumleian Lectures, British Medical Journal, April, 1888.

Blood-letting is inadmissible in the case of children; in strong youths over fifteen or sixteen years of age a moderate amount of blood might be withdrawn from the arm. We should promote the action of the skin, and of all diaphoretics the hot-air bath is in these cases the best. When the patient is febrile we must be very careful about still further raising the temperature, either with hot water or hot air, owing to the risk of thus substituting coma for convulsions. In such cases the wet pack should be used. Pilocarpine is a doubtful and dangerous remedy in uræmic convulsions, though often recommended. We should try and restore the action of the kidneys; as Dr. Dickinson says, "a little urine is worth a great deal of any other secretion." The diuretics to use in such cases are benzoate of ammonia, the acetate, citrate, bicarbonate, or acid tartrate of potassium. Sweet spirits of nitre or small doses of nitroglycerin may be added to the diuretic mixture to relieve arterial spasm. The bowels should be freely evacuated by a good cholagogue cathartic, though purgation should not be carried to the extent of producing exhaustion. Uræmic convulsions occurring in the acute nephritis of children are usually very amenable to treatment, and not often fatal; so you should be careful not to kill your patient with any heroic measures nor produce any exhaustion from which he may not recover.

Dropsy.—The treatment of dropsy more particularly belongs to the second period, when the inflammatory process is subsiding, though our management of the case during the earlier stage of the disease should limit the extent of its occurrence and lessen the amount of fluid effused, so, dealing with this question at this stage of my paper helps us to bridge over the two periods into which, for convenience' sake, I have artificially divided the treatment of this disease. Dropsy generally occurs soon after the first twenty-four hours of the disease; but as in cases of any severity the quantity of urine eliminated will be small during the first eight or ten days, we should limit the amount of fluid ingested as nearly as possible to the amount we are likely to get rid of by the skin, lungs, and bowels. When the urine excreted is very scanty and the amount of fluid imbibed great, then rapid effusion takes place into the cellular tissue; and when this reservoir is filled an overflow takes place into the serous cavities, or you may get œdema of the lungs or glottis. These not infrequent causes of death are readily induced. It is thus, in my opinion, important in the early stage of the disease to limit the amount of fluid taken in. In attempting to empty a reservoir quickly your attention should not merely be taken up with increasing the outflow, but also to cutting off the rivulet which keeps it full.

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* British Medical Journal, vol. ii. p. 207, 1886.

In some cases, when the anasarca is great, the skin distended, white, and glistening, and the blood thus driven away from the surface, it is most difficult to induce free perspiration. By sweating you can only remove fluid from the circulation in the capillaries supplying the sweat-glands and ducts, and before that which is effused can be thus eliminated it must be absorbed into the blood-vessels. In these severe cases you should not hesitate to puncture the limbs either with Southey's trocars or simply with the needle. When once the œdema of the cellular is relieved the blood circulates freely in the surface, and diaphoresis is easily promoted. If there be effusion into any of the serous cavities, you should not hesitate for an instant to puncture the lower limbs. I think it will generally be found better to thus indirectly draw off the fluid from those cavities rather than by directly aspirating them. The amount of fluid imbibed should also be cut down. For drawing off the fluid from the limbs, Southey's trocars are generally preferred to simple acupuncture, on account of the ease with which the fluid can be collected and the less liability to erysipelatous inflammation from the trickling fluid. This latter disadvantage of simple puncture may be obviated by keeping the limbs well oiled.

We should try to establish the action of the kidneys as soon as possible, for at the best the skin and bowels are poor substitutes. We have sufficiently indicated how our attention should be directed to these organs during the progress of the inflammation; but when that process begins to subside, and the circulation in the kidneys is restored, then we should encourage the free discharge of urine by mild saline diuretics, such as the bitartrate and acetate of potassium.

Dr. George Johnson* only mentions diuretics "for the purpose of deprecating their employment. A slight consideration of the morbid anatomy and pathology of the disease will suffice to show that in the early stage diuretic medicines must be injurious, while in the later stages they are quite unnecessary." No doubt stimulating diuretics, such as cantharides and turpentine, which increase the congestion of the kidneys, merit this condemnation; but do mild saline diuretics "increase the mischief by adding to those materials in the blood which the kidney is striving to eliminate?" Do they really give the renal cells any work to do? Do they not rather exert their diuretic influence by increasing the exosmosis through the Malpighian capillaries? If this be, as I think, correct, then these saline diuretics, by lessening the quantity of fluid in the Malpighian, and as a consequence in the intertubular capillaries, will relieve the congestion of the kidneys, and so tend to diminish cell-proliferation. Moreover, the large quantity of fluid being discharged into the upper extremities of the tubules will thoroughly flood them; and when the urine has been rendered alkaline by the acetate or citrate of potash, which are excreted as carbonates, it exerts a more or less solvent action on the epithelial débris and fibrinous casts, or at least makes them more easily washed out. This is not merely theoretical speculation, but is in accordance with common experience. When the urine has been rendered early alkaline there is rarely a great amount of sediment, and as the urine increases in quantity the relative proportion of albumen diminishes.

Dr. Johnson refers to the spontaneous diuresis which takes place in the later stages of the disease as rendering diuretics unnecessary, but such does not always take place; and surely, as Dr. Gairdner says,* "a movement towards cure being shown forth in this way rather than in another, spontaneously, should tend to raise a presumption in favor of rather than against the attempt to imitate nature by simple processes closely allied to her own."

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* Diseases of the Kidney, 1852 p. 137.

I have frequently seen diuretics succeed in removing the dropsy, and with the best results to the patient, when diaphoretics and purgatives failed. About the best diuretics in these cases are bitartrate, acetate, citrate, and bicarbonate of potassium, and we may also include the salts of sodium and lithium. These alkaline remedies have not only the advantage of rendering the urine less acid or alkaline, but also increase the elimination of acid from the system. Dr. Beale, in his remarks† "On the Effects of Diuretics and Sudorifics in Certain Acute Inflammations," says, "The increased secretion of urine, the profuse sweating, often accompanied with increased action of the bowels, which mark the occurrence of resolution of the inflammation,—that is, of the death of the cells, or masses of germinal matter which enter largely into the formation of the inflammatory lymph,—are undoubtedly encouraged by giving acetates, citrates, carbonates, and some other salts."

In obstinate and chronic cases more stimulating diuretics may be used, such as squills, sweet spirits of nitre, oil of juniper, etc. When the heart's power is flagging, and the blood requires more motion imparted, then digitalis is the agent required. It may be presented alone, or in combination with other diuretics. Some think highly of digitalis fomentations, but personally I have never been quite convinced of the *rationale* of the treatment, as, especially in those cases of dropsy, the absorptive power of the skin must be very slight, and there cannot be much special action through the nervous system. I prefer giving the digitalis in some of the before-mentioned modes, and applying fomentations to the loins without any anticipations beyond those to be expected from heat and moisture. If there be much anæmia and defective vascular tone, it may be necessary to employ iron in the treatment of the dropsy.

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* The Treatment of Bright's Disease, with Special Reference to the Use of Diuretic Remedies; Glasgow Med. Journal, September, 1880.

† Kidney Diseases, etc., third edition, p. 204.

I have previously referred to the necessity of limiting the amount of fluid imbibed during the early stage of the nephritis, but now that the kidneys are acting freely, the patient may be allowed to drink *ad libitum* of pure water, Imperial, barley-water or milk, and soda-water. The abundant supply of fluid increases the elimination of excrementitious products. The treatment of such other complications as congestion of the lungs, bronchitis, pneumonia, pleurisy, and pericarditis we need not here dwell upon, as the varying conditions of each individual case will sufficiently indicate the line of action. As a general rule, it is well to keep the patient in bed until the dropsy disappears, though in weak anæmic patients, where the dropsy long continues after the subsidence of all acute symptoms, this is not always desirable, or even prudent. Fresh air, iron, and other tonic treatment may be necessary to get rid of the anæmia on which the prolonged dropsy may depend.

When the acute symptoms have gone and the dropsy disappeared, it is well to discontinue all active treatment. Then our indications for treatment are to restore the functions of the kidneys, and get rid of the albumen in the urine. For the latter purpose gallic acid has been largely prescribed, but it is really worse than useless, as it has no effect in diminishing the albumen, and it disturbs the digestion. Our objects will be best attained by directing our attention to the general health, and the state of the vascular system. Whatever improves those conditions will ameliorate the state of the kidneys. To lessen the anæmia which always exists in these cases iron in one form or another is essential, but the tendency is to give it in too large doses. The quantity of iron which can be assimilated at any time is small, so any excessive amount only passes off by the bowels, and most likely disturbs the digestive organs, which in these cases are very readily upset. Iron should not be given when the tongue is dirty and the hepatic functions disordered, as it will likely aggravate these dyspeptic troubles, greatly increase the arterial tension, and thus augment the evils it was intended to remedy.

Many agents have been used to try and check the excretion of the albumen, but any line of treatment which does not take into account the mechanical nature of the transudation, and the causes which give rise to the high pressure in the Malpighian capillaries, is sure to fail. Ergot has been highly spoken of by some, and also fuchsin. I have tried the latter remedy in a few cases, I believe, with advantage; but my experience of its use is too limited to express a definite opinion either as to the drug or its mode of action.

When we lessen the congestion of the kidneys and get rid of the albumen, we at the same time contribute to the restoration of the function of the secreting cells. We should thus see that the skin, digestive organs, bowels, and lungs are in good working order, so as to get rid of waste products, lower arterial tension, and promote the general health. During this period the eliminating function of the kidneys may be fairly re-established, but albuminuria remain, accompanied by large arteries from deficient vaso-motor tone, and high arterial tension. In such cases I have found rapid and permanent benefit from a mixture of caffeine, belladonna, and benzoate of ammonia; the caffeine seems at first to increase the renal desquamation, but also stimulates its regeneration.

Throughout the whole progress of the case the body should be kept warmly clothed and the action of the skin maintained. This can be best accomplished by mild diaphoretics, the occasional use of the wet pack, warm baths, or a Turkish bath for those of more advanced years. When the dropsy has subsided and convalescence is fairly established the patient may be allowed moderate exercise, which is necessary for muscular activity and essential to the healthy maintenance of all the bodily functions in promoting those chemico-vital changes throughout the system on which vital activity depends. By long-continued rest in bed and low diet you may give the kidneys little work to do, and the urine may be free from albumen, but once any strain is thrown upon the unused and wasted muscles, the albumen at once returns. In these cases the heart, which has not recovered from the effects of the acute illness, may not be able to cope with the extra strain, and hyperæmia of the internal organs is the result. Moderate exercise, well regulated according to the capacity of the patient, assists the action of the skin, increases oxidation, thus augmenting the work of the lungs; but there need be no extra strain thrown upon the kidneys so long as the diet is not highly nitrogenous and the hepatic functions are well maintained. I here wish to repeat that attention must be paid to the amount of urea as well as that of albumen excreted. If the urea be greatly lessened, the exercise must be very limited and the diet must consist largely of carbohydrates.

Diet.—We have already spoken of the diet during the acute stage of the disease. Now the amount of nitrogenous material may be gradually increased. Milk forms the staple article of diet with most authorities on nephritis. Occasionally patients find some difficulty in digesting it, especially if there be much acidity of the stomach. It may then be prescribed with lime-water or peptonized, or the patient may have peptonized milk gruel. He may have a liberal allowance of farinaceous articles of diet with or without malt extract, and a free supply of ripe fruits. Beef-tea and soups, which contain large quantities of creatin, creatinin, and other extractives, should be strictly forbidden. Dr. Carter, from personal observation, condemns soda scones and oatmeal. Both these articles are rather trying on weak digestion and should certainly be interdicted. Tea and coffee should be prohibited during the early period of the disease, and alcoholic stimulants had better not be given except in cases of urgent necessity. Eggs should be avoided in all stages of the disease. When convalescence is fairly established, the diet may become more liberal. Thus, fish, poultry, butcher's meat, fresh vegetables, etc., may be given; of course care must be taken that the food is always given in an easily-digested form, and only in sufficient quantities for the requirements of the system, more especially in respect of the nitrogenous elements of the food. The diet should be just sufficient in quantity and quality to maintain healthy nutrition, and the exercise proportionate to secure functional activity and get rid of waste products.

Always be careful not to let your patient slip too quickly out of your hands. Do not pronounce the case cured because, after five or six weeks' rest in bed, the urine is free from albumen. The patient should be under occasional observation for at least twelve months, and no case should be stated to be cured until after the first winter has been passed with a non-albuminous urine, nor until many examinations of the urinary sediment with the microscope have failed to detect any abnormal ingredients, nor until the daily excretion of urea is normal in amount. Where expense is not a matter of consideration, at least the first winter, after an attack of acute Bright's disease, should be spent in a dry, hot southern clime.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Cook: Is Dentition a Cause of Disease? (*Am. Jour. Obstet.*, June, 1887.)

The author, after alluding to the popularity of the belief that dentition is a cause of disease, remarks, if it be true that dentition is the cause of so many deaths, then, indeed, has nature been lamentably inadequate to the necessity of properly providing for the growth and development of children, in making the evolution of the teeth, which is a necessary and inevitable process, a cause of death, and thereby defeating her own purpose. From observation and thought he is persuaded that nature has not been at fault, but that the error lies in assigning a cause for the disease, and dentition is a most convenient scapegoat. The important fact to be kept in mind is that normally the teeth are developing from the seventh week of fœtal life up to about the twenty-first year of age. The term dentition, as ordinarily used, means the period of the eruption of the temporary teeth, and those who believe that it is a factor in producing disease limit its causation to that period; that is, from the seventh month up to two and a half years. But if the teeth have anything to do with producing disease, would it not be as reasonable to say that they so operate during the entire time of their development as to confine their deleterious influence to the eruptive stage? There is no uniformity of sentiment on the subject of how dentition causes disease. The difficulty has been referred to backward pressure upon the sensitive tooth-pulp, forward pressure upon the gums, a persistent and harassing pruritus of the gums, etc. Forward pressure upon the gums, if such there be, would be insignificant in producing disease, as this tissue is "remarkable for its limited sensibility." There is no pressure backward upon the sensitive tooth-pulp, for the tooth is pushed upward by the growth of the fang below, and there is no resistance, for the gum is as certainly absorbed in front of the advancing milk-teeth as the roots of the temporary teeth disappear on the approach of the crowns of the permanent teeth. A physician called to see a child with, say, entero-colitis, will, ten to one, coincide with the suggestion of the mother that dentition is the cause of the trouble; that is the easiest thing to do, and it is entirely satisfactory to the mother. Taking into consideration the facts that certain atmospheric conditions, bad hygiene, and errors in diet will produce the same kind of diseases in the adult as in the child, and that dentition is a necessary and inevitable physiological process, is it not more reasonable to attribute the diseases of infancy to other than a physiological cause?

Goelet: Salol and Ice-Water Enemata in the Treatment of Diarrhœa, Dysentery, and Intestinal Inflammation. (*N. Y. Med. Jour.*, August 6, 1887.)

The author claims to have had good success with salol in diarrhœas. For a child six months old the dose is half a grain every two hours. At one year, a grain to a grain and a half; at two years, a grain and a half to two grains. As the symptoms are relieved, the interval between each dose is lengthened. Ice-water enemata are considered of great therapeutic value in all conditions of loose bowels, but are especially indicated where there is rectal tenesmus with bloody or slimy stools.

Koplik: Iodism in the Nursing Infant. (*Med. Rec.*, September 24, 1887.)

The mother of the child presenting undoubted evidences of syphilis, was given about twelve grains of potassium iodide t. i. d. The infant, three months old and apparently healthy, two days after the mother began treatment, presented a maculo-papular eruption, of a rose-red color, on the right arm and forehead. In the course of a few days others appeared on the chin, chest, and abdomen. The old spots developed minute pustules. There was some disturbance of the alimentary tract and a little increased secretion of the nose. The iodide was stopped and the eruption disappeared, but reappeared with less intensity when the drug was commenced again. Traces of the iodide were found in the milk.

Brouardel and Pouchet: Poisoning by Arsenic, and Presence of the Poison in the Milk of Nursing Women. (*Jour. de Méd.*, June 12, 1887.)

A test question upon this subject was brought to the attention of the authors. A man tried to poison his wife with arsenious acid while she was nursing her child. She suffered from vomiting and diarrhœa, and the child, who was two months old, had the same symptoms, and died forty-eight hours after the sickness began. Several months later the remains were disinterred, but they had become almost entirely transformed into adipocere, the skin being intact and of brownish-gray color. The remains weighed but two kilogrammes, but by chemical analysis five milligrammes of arsenic were recovered. The wrappings of the remains and the internal surface of the coffin also showed traces of arsenic. To verify the conclusions in this case the authors gave Fowler's solution to some nursing women, beginning with two drops daily, and increasing the quantity until twelve drops daily were taken. Although the women showed no serious symptoms, arsenic could be detected in the milk of each of them, and after twelve drops had been taken daily for six days they could recover one milligramme of arsenic from one hundred grammes of milk. Experiments upon animals gave similar results, the poison being diffused also through the muscles, the connective tissue, and the liver. Hence the conclusion that medicines containing arsenic should be withheld from women during lactation. A. F. C.

Hidowitz: Antifebrin in the Febrile Diseases of Children. (*Centralbl. f. K.*, July 9, 1887.)

The author reports the use of antifebrin in fifty-three cases, including four of scarlatina, eleven of measles, eleven of measles with subsequent pneumonia, two of measles with tuberculosis, two of facial erysipelas, four of croupous pneumonia, two of lobular pneumonia, two of pleuro-pneumonia, four of bronchitis, three of tuberculosis, four of follicular tonsillitis, three of gastricismus, one of acute intestinal catarrh. An interesting fact was that at the end of ten or twenty minutes after the medicine was taken the temperature began to decline, and continued steadily until it reached its lowest mark. After remaining at this point for a short time it began to rise again. The rapidity with which the temperature declined seemed to depend not so much upon the size of the dose as upon the peculiarity of the child and of the disease. Another observation was the very favorable effect upon the general condition of the children. Those who had previously been restless and fretful became quiet and soon fell asleep. In several instances the severe symptoms connected with collapse were quickly relieved after the ingestion of the medicine. Scarlatina and erysipelas were more rebellious to the antipyretic action of the drug than any of the other diseases in which it was used, the temperature falling only a few tenths of a degree. In pneumonia occurring as a complication of measles, in croupous and lobular pneumonia, in measles complicated with tuberculous affections of the stomach and intestines, the antipyretic action of the drug was prompt and energetic. The pulse became fuller, its frequency being diminished, though not always in proportion to the decline of the temperature, the respiration became deeper and more quiet. The drug was given in the form of powder, and in doses of ten centigrammes to children three or four years of age. To older children, twenty to thirty, or even fifty, centigrammes were given. Small doses usually sufficed for poorly-nourished children, the reaction being much more energetic than in more robust children. As much as two grammes was given in the course of a day. The antifebrin never produced any perceptible effect upon the duration of the disease. In some cases of croupous pneumonia its use was accompanied by profuse perspiration, with cyanosis of the face and the ends of the fingers.

A. F. C.

Vigier: New Treatment for Diarrhœa in Infants. (*Jour. de Méd.*, June 26, 1887.)

The author calls attention to the effect of the bacillus discovered by Damaschino and Clado in 1884, in producing the green color which characterizes the diarrhœal dejections of young children; and also to the recent communication to the French Academy by Hayem, with respect to the culture of this bacillus and the means by which it can be destroyed. Hayem and his assistant found that this end could be readily accomplished with lactic acid, about half a gramme daily being required. It is especially necessary to disinfect the clothing and bedding which are soiled by the dejections. This practice is directly contrary to the methods which have heretofore been in use, of treating this disease with alkalies. A formula which the author has found very effective, and not objectionable to the taste, is as follows:

℞ Acidi lactici, 2 grammes;
Syr. simp., 98 grammes;
Limonis ess., gtt. i. M. et filtr.
Sig.—Two or three coffeespoonfuls daily.

A. F. C.

Fehling: The Influence of Medicines taken by Nursing Women upon their Infants. (*Jour. de Méd.*, July 31, 1887.)

If salicylate of sodium be taken by the nurse in doses of one to three grammes, the author has found that it may be recovered in the urine of the child. The same is true in respect of iodide of potassium.

Ferrocyanide of potash given in doses of one or two grammes for three doses was not recovered from the urine of the infant.

If iodoform is given to the nurse by external application, it will be traced three or four days afterwards in the urine of the infant, as iodine. In none of the cases in which these experiments were tried did any harm result to the infant. Elimination of mercury by means of the milk rarely occurs.

If citric acid in a one to ninety solution be given for four days, the quantity of the solution not exceeding three grammes, and if as much as seven and a half grammes of a solution of hydrochloric acid, five to one hundred and eighty, be administered to a nursing woman in the course of four days, the author's experiments show that the milk undergoes no perceptible change, and the child will experience no harm. The author concludes that acid food, salads, for example, need not be withheld from nursing women, at least in so far as their acidity is concerned.

Tincture of opium given to nursing women in doses of twenty-five drops resulted in neither drowsiness nor constipation on the part of the infants. Morphine given hypodermically in doses of two to eight milligrammes resulted very seldom in disadvantage to the infant, chloral produced bad effects somewhat more frequently, especially if the hypodermic injection were given a very short time before the child was put to the breast. Atropine given in doses of one to five milligrammes was in no case followed by dilatation of the child's pupils. The author believes that fever in the mother is not sufficient cause for weaning her child, but the child should be weaned if the mother has erysipelas or scarlatina. A. F. C.

Graucher: Treatment of the Complications of Measles, especially those of the Eye and Ear. (*Le Concours Méd.*, July 9, 1887.)

It is the complications of measles rather than the disease itself which make it a fatal disease. Of these broncho-pneumonia and diphtheria are the most common in children under two years of age, and they almost always induce a fatal result.

Of the ear-affections which complicate measles, otitis media is of very common occurrence, being present most frequently during convalescence. It is due to an extension of the morbid condition upon the mucous membrane of the pharynx and nasal fossæ by way of the Eustachian tubes. The symptoms of the otitis of rubeola differ according as the general condition of the child is or is not intact. There may be severe pain, fever of greater or less intensity, delirium, and a general *ensemble* of symptoms suggestive of the invasion of a cerebral or pulmonary disease; or the general condition may be unaffected, and the first indication of involvement of the ears be the discharge of pus from the auditory meatus.. An intermediate type is mentioned by Hermet, in which the local symptoms are preceded or accompanied by an elevation of temperature of short duration without any other trouble. The rupture of the drum-membrane usually occurs at the top of its lower segment, is not usually extensive, and quickly cicatrizes. In some cases the foregoing simple condition does not obtain, but there is extension of the suppuration to the mastoid cells, caries of the petrous portion of the bone, and paralysis of the facial nerve. The process may extend to the meninges, and the child die from meningo-encephalitis. In other cases the ossicles may be destroyed with permanent deafness as a result, though the general condition may not be affected. In very young children deaf-mutism may be the outcome of these ear-troubles, hence the great importance of the complication.

The treatment should consist of irrigation of the ear from two to six times daily, according to the extent of the suppuration, with warm carbolized or borated water, the stream being projected with great gentleness. Then, the ear having been carefully dried, a fine astringent powder, either alum, borax, or iodoform, should be insufflated.

Complications of the eyes are not apt to be of so serious a character as those of the ear, the lids, corneæ, and conjunctivæ alone being implicated. The inflammations are rarely very deep in extent, phlyctenular conjunctivitis and kerato-conjunctivitis being the forms of disease most commonly seen. Serious results to the cornea from ulceration are not frequent. The ocular complications may occur during the stage of eruption, but they are seen more frequently during convalescence. For acute blepharitis with swelling of the lids, compresses moistened in a warm solution of boric acid should be used permanently, while morning and evening one should apply to the borders of the lids a small portion of ointment containing

Vaseline, 10 grammes;
Hydr. ox. flav., .50 gramme.

If the blepharitis should develop into chronic eczema, warm poultices, made antiseptic with boric acid, should be used, and for an application

Vaseline, 5 grammes;
Zinci ox., .50 gramme.

Should the conjunctivitis be simple, cold applications of a solution of boric acid may be used, but if accompanied with keratitis the applications should be warm. The conjunctivitis may be so purulent as to suggest the blennorrhagic form of the disease. In such cases the mild solution of nitrate of silver (two to five per cent.) should be used the same as if that were the condition. Should keratitis predominate, the yellow precipitate ointment should be applied. Should perforation of the cornea appear imminent, the following collyrium may be used:

Aq. destil., 10 grammes;
Eserine salicyl., .05 gramme.

A. F. C.

Brown: Essence of Turpentine in the Treatment of Painful Intestinal Affections in Children. (*Jour. de Méd.*, July 31, 1887.)

The author considers this drug eminently soothing to an irritated and inflamed intestinal mucous membrane. It tends to heal ulcerated surfaces, and is also antiseptic and disinfectant. It is also useful to excite increased salivary, gastric, pancreatic, and intestinal secretions. In the author's experience it was also useful in relieving the pain accompanying diarrhœa or constipation; also the vomiting and emaciation which so often attend enteritis in children brought up by the bottle. It is also indicated in dysentery and in the infantile cholera produced in connection with high temperatures, when the intestine is evidently irritated by the lactic, acetic, and butyric acids which have been generated within it. For a child one year of age the dose is two drops, and this may be repeated every two or three hours, according to circumstances.

A. F. C.

Ledé: The Mortality of Infants during the Nursing Period. (*Le Concours Méd.*, June 18, 1887.)

The mortality among infants who are farmed out during the first month of life is 10.37 per cent. if they are nursed at the breast, and 23.96 to 33.47 per cent. if fed from the bottle. The mortality diminishes with age for breast-fed infants, while it continues between 15 and 28 per cent. for the bottle-fed. The mortality of legitimate and illegitimate children is about the same—from 7.32 to 10.95 per cent.—when both are breastfed. It is nearly 5 per cent. higher for the illegitimate (20.83) when both are bottle-fed. The author concludes,—(1) that mortality is increased by feeding infants from the bottle from birth; (2) that infants who are *farmed out* are more apt to die during the first months of such experience, especially if fed from the bottle; (3) among such children the causes of death are, in the majority of cases, athrepsia, diarrhœa, and enteritis; (4) that the frequency of bronchitis among them during the first weeks of life shows the danger of carrying them about; (5) that the increased rate of mortality between the sixth and the tenth months is due to premature weaning or partial weaning, epidemic diseases, and cerebral disorders which frequently accompany dentition. (The foregoing observations are evidently based upon French statistics, and are therefore especially applicable to France.) A. F. C.

Riess: The Use of Pilocarpine in Lung-Diseases. (*Centralbl. f. Kinderh.*, July 9, 1887.)

During the past year the author has made careful investigations with pilocarpine with reference to its utility as a diuretic and sialagogue. Investigations upon animals had already shown that its use excited an abundant secretion of thin and watery mucus from the glands of the trachea and bronchi, which, if allowed to accumulate in the air-passages, would readily induce œdema of the lungs. The drug has therefore been frequently condemned as a medicament in lung-diseases, although it has also been shown that with suitable care serious results need not be anticipated. The author has used it satisfactorily in chronic bronchial catarrh, pneumonia, whooping-cough, laryngeal diphtheria, and laryngeal croup, constantly obtaining by its use an increase in the bronchial secretion, this result being usually obtained quickly, and never with the manifestation of dangerous symptoms. In eight cases of pneumonia in adults it was given hypodermically to hasten the resorption of the exudate, and with good results. In whooping-cough it was used for children from eight to twelve years of age, with a view of relieving them of the accumulations in the larynx, trachea, and bronchi. One centigramme of the hydrochlorate was used subcutaneously every day or every second day from eight to fourteen days, with the result of diminishing the number and duration of the paroxysms. The discharges became more fluid and were expelled more readily, and after discontinuing the pilocarpine the disease disappeared in most cases after an additional week or two of simple treatment. The pilocarpine was also used in treating diphtheritic angina in children eight years of age, an injection of one centigramme of the muriate being used daily for three to five days. The result was an increase of the secretions and a shedding of the diphtheritic membrane, but the latter was accomplished somewhat more quickly by local applications of papayotin. Occasionally the effect of the pilocarpine was to excite vomiting, which was not distressing, and in some cases effected the discharge of the accumulations in the air-passages. The only effect upon the heart, even in the most feeble children, was a slight increase in the frequency of the pulse. The author made it a point to watch carefully the effect of each dose, either remaining with the child until the effect was produced or within easy hailing distance. A. F. C.

II.—MEDICINE.

Rahl: Congenital Syphilis, with Delayed Phenomena. (*Centr. f. Kinderh.*, May 28, 1887.)

The influence of syphilis in parents upon their offspring is always underestimated. When scrofulous or decidedly feeble children are the offspring of parents who are apparently healthy and strong, errors of hygiene and nutrition having been excluded, we should always take into consideration the possible existence of syphilis. The author believes in a congenital syphilis with delayed manifestations. In one hundred and twenty-seven cases which he analyzed, the greatest number occurred at the twelfth year. A few occurred at the seventh year, and the number increased rapidly with each succeeding year until the maximum was reached. From the sixteenth year the number grew rapidly smaller until the twentieth, at which time there was an increase again. The most important changes in this form of syphilis were those which concerned the bony system, the tibia being the most frequently diseased. Of the affections of the joint in this disease, the knee-joint was most frequently involved. Of fifty cases in which the eyes were diseased, there was parenchymatous keratitis in forty-three. As an explanation for this disease the author offers the hypothesis that there is latent syphilis in the father at the time of procreation: syphilitic germs are communicated to the child, and these are developed only after the lapse of years and under favorable circumstances.

The comment upon the author's theory would be (according to Hochsinger) that it does not accord with the daily observed facts. Latent syphilis in the father frequently occasions syphilis in the children which are begotten, and if these are born alive they either show the phenomena of syphilis, such as pemphigus papules, coryza, infiltration of the palms of the hands and the soles of the feet, or else the characteristic symptoms of cutaneous, mucous, or visceral syphilis develop within a few weeks. A. F. C.

Marotta: **The Microparasites of Variola.** (*Centr. f. Kinderh.*, May 28, 1887.)

A series of investigations was made in which the microorganisms from lymph obtained from patients with smallpox was tested with reference to its pathogenic effect. In the course of the study lymph from two patients with variola was cultivated upon gelatin, but the product was sterile. Advantage was then taken of the fact which had been observed during the experiments with the lymph from smallpox, that the blood of patients with that disease had an unusually decided alkaline reaction, four tubes being taken, into each of which eight grammes of nutrient gelatin were placed. To one were added four drops of a saturated sterilized solution of bicarbonate of soda, to another two drops, and to the others none. Lymph was taken from a patient with confluent variola in the pustular stage and placed in the four tubes, which were kept at a temperature of 21° C. As a result, the gelatin to which none of the alkali had been added suffered no change, while in the two tubes in which it had been placed an orange-yellow culture was slowly developed. The development continued in the more alkaline medium for two months, in the lesser for a somewhat longer period. In both was found a coccus, which was isolated, and pure cultivations were made from it upon gelatin. On the third day round, point-like colonies could be distinguished with the naked eye upon the surface of the gelatin, which were orange-yellow in color, diffused through the gelatin, and gave to it a decided alkalescence. They could be propagated between the limits of 16° and 43° Cels. Under the microscope round, finely granular, translucent colonies were seen, which contained small cocci, and were readily stained with gentian violet. The name *coccus tetragenus* was given to them. In older pustules, in cases of smallpox, other small cocci were also seen, moving actively in drop-like collections, which formed milky-white colonies on gelatin, and resembled pus cocci. Two calves were inoculated with a culture of *coccus tetragenus* of five weeks' growth, and with another of seven weeks' growth, an interval of two weeks elapsing between each operation, the culture for the first calf having reached the third generation, and that for the second the seventh generation. The cultures were developed on gelatin. On both animals pustules developed at almost all the points of inoculation, which had a color resembling mother-of-pearl after seven to twenty-four hours, and contained lymph which produced vaccine pustules when other calves were inoculated with it. The cocci in question were injected subcutaneously into dogs and guinea-pigs, but did not cause suppuration. The character of the work which is done at the Naples institution for animal vaccination, where these investigations were conducted, admits of no doubt as to the conclusion that true vaccine pustules were obtained.

A. F. C.

Leyden: Observations concerning Cerebro-Spinal Meningitis, and also concerning Vomiting in Febrile Conditions. (*Centralbl. f. K.*, July 9, 1887.)

Like other contagio-miasmatic diseases, cerebro-spinal meningitis is caused by micro-organisms. This has been shown by Klebs, Eberth, and the author, and quite recently Fränkel has demonstrated the identity of the coccus of pneumonia and meningitis. This microbe is regarded as the excitant of the spontaneous or epidemic form of cerebro-spinal meningitis, while those forms which are associated with trauma or erysipelas are considered as due to *streptococcus pyogenes*, traumatic meningitis being of greater malignity than the epidemic form. The cause of the disease being associated with the microbe, the greater difficulty in the treatment of this element of meningitis as compared with pneumonia is evident: for in the former case the microbe must remain in the tissues, while in the latter it is expelled, to a considerable extent, with the sputum. The long continuation of severe symptoms in meningitis and the frequent occurrence of relapses may be explained by the continuance of favorable conditions within the tissues for the development of the microbes. The author believes that the danger from the disease is rather from interference with the functions of the brain than from intensity of the infection. If the disease attacks the convexity of the brain, life may be threatened by epileptic convulsions, while exudation into the ventricles may cause coma and cerebral paralysis. After the first attack is over, subsequent ones may endanger life, or the strength may be exhausted by a long-continued convalescence. Even after the death of the parasites there is danger to the function of the nerve-centres as long as the exudate remains unabsorbed. For the treatment of the first stage of the inflammatory condition we have at present no entirely satisfactory therapeutic agents: the object of treatment being to kill or to disable the parasites. Mercurial ointment or calomel may be given, but they may be ineffective. A diminution in the severity of the symptoms has sometimes been observed by this treatment. Neither can specific effects be expected from iodide of potash. Antipyretic agents at the beginning of the disease are of questionable value, and therefore the only agents which the author can recommend are ice, leeches, and derivatives for the intestine; morphine also will serve an excellent purpose. The treatment by baths is objected to, as it is desirable that the patient should be as quiet as possible. When the inflammatory period is over, rest should still be maintained to favor convalescence and prevent complications. Among the complications which occur in the post-febrile stage of the disease vomiting is one of the most troublesome, and not infrequently leads to a fatal end.

Vomiting in febrile diseases is always an important symptom, and is discussed with reference to a variety of causes.

1. Vomiting in the prodromal and initial stages. This is a common symptom in the acute exanthemata, and it may be excited, apparently, by the chill in malarial fever. The significance of this symptom varies with the disease which it introduces.

2. Symptomatic vomiting. This symptom is especially noticeable in cerebro-spinal meningitis and peritonitis. In these diseases it may occur at any time, is exhausting and obstinate in character, and signifies the greatest danger to life.

3. Vomiting as the effect of medicinal substances. Certain antipyretic agents have a decided effect of this kind, but usually no serious results follow.

4. Vomiting on account of improper nourishment.

5. Vomiting from weakness. In such cases there is hyperæsthesia of the stomach in connection with weak and excitable individuals. It is often accompanied by a spasmodic *singultus*, which is of bad omen. This form of vomiting may be excited by the slightest irritants, indeed it may signify that the stomach will scarcely tolerate anything. The variety of agents which may be used to control it is very great (ice, seltzer, champagne, wine, ether, morphine, bismuth, counter-irritation, etc.), and all of them may be ineffective. Vomiting during the afebrile and convalescent periods of some diseases is not of necessity a dangerous symptom; in diphtheria and typhoid fever, however, it may precede collapse and heart-paralysis. A. F. C.

Lanfenauer: Hystero-epilepsy in Boys. (*Centr. f. K.*, August 6, 1887.)

Hystero-epilepsy in men presents no distinguishing characteristics from the same condition in women. The same may be said of its appearance in the two sexes in childhood, with the exception that in children the picture of the disease is less decided and typical. Four cases are narrated of boys between nine and twelve years of age in whom the existence of the disease was undoubted. All of them had hysterical mothers, and two were intellectually developed beyond their years. They suffered from regularly recurring attacks, in which there was a single phase of hallucination with delirium or an epileptoid paroxysm. The diagnosis was based upon the existence of hyperæsthetic areas, limitation of the field of vision, and disordered sense of color. Anæsthesiæ in hysterical children are less frequent than hyperæsthesiæ, the latter being usually unilateral and of very limited area. The skin and tendon reflexes are also hypersensitive. The treatment should consist of separation from sympathizing friends, electricity, massage, and the suitable use of cold water. A. F. C.

Le Gendre: Scarlatina and Angina. (*Le Concours Méd.*, July 23, 1887.)

The anginose phenomena which accompany the invasion, the course, or the convalescence of scarlatina may cause difficulty with respect to diagnosis and prognosis. Among these may be mentioned the pharyngeal exanthema, which is sometimes pale, but oftener as red as a raspberry, and may be accompanied by inflammatory swelling of the velum of the palate and the pillars of the fauces, which may end in suppuration. Amygdalitic angina may amount to a simple swelling and redness of the tonsils, or the latter may be covered with a soft, white, pultaceous deposit, which may be easily detached. Aside from erythematous and vesicular anginas, one sees also, in scarlatina, pseudo-membranous deposits, which cover the pharynx and the isthmus of the œsophagus, which have a decided bearing upon the matters of diagnosis and prognosis, and concerning which there is disagreement among authors as to their relation to diphtheria. The author quotes a recent writer, Victor Odent, who believes in the existence of two varieties of pseudo-membranous angina occurring in the course of scarlatina. This writer's views are discussed at length.

If true diphtheria complicates angina it usually occurs from the seventh to the fourteenth day of the disease,—that is, after the fever and exanthema have disappeared. It may even be delayed for a month from the time when the patient first fell sick, two infections succeeding each other at short intervals. The prognosis is usually fatal, but it becomes better as the interval between the two attacks becomes longer, and convalescence from the first becomes the more thoroughly established.

n pseudo-membranous angina which is not diphtheritic, the lse membrane may appear on the first or the second day, but never later than the third, and this is the author's chief point of differentiation from the diphtheritic variety. The appearance of the false membrane in non-diphtheritic cases varies with different epidemics; it may be a simple whitish deposit, it may consist of thick folds or layers, or it may be a well-formed membrane. The symptoms of which Odent speaks are pronounced dysphagia, attempts at eating causing severe pain; swelling of the glands, but not to the same extent as in the diphtheritic form; diffuse infiltration of the cellular tissue of the neck, either from the beginning or after the disappearance of the exudate. The discharge is seldom offensive, and gangrene never results. It has no tendency to invade the larynx, but often extends to the nasal fossæ, and to the middle ear by way of the Eustachian tubes, which does not occur in the diphtheritic form. The consequent otitis is accompanied with severe pain and perforation of the tympanum, and results in irremediable deafness. As this non-diphtheritic form of pseudo-membranous angina occurs during the period of eruption of the scarlatina, there is fever as long as the anginose complication continues,—that is, from seven to nine days. It gradually disappears after desquamation begins. The most distinguishing feature of this form of angina is its benignity. Recovery is seldom followed by paralysis. Anatomical differentiation of this from the malignant form of diphtheritic angina is impossible at present, as the false membranes have about the same appearance and the same structure in both. Bacteriological examinations may give more light upon the subject when the pathogenic properties of Loeffler's microbe have been fully established. From clinical considerations the conclusions are as follows: True diphtheritic angina is the result of contagion, hence the necessity that a physician who has the care of patients with scarlatina should carefully isolate them from any suspicious surroundings and keep their throats aseptic, even when there are symptoms of only a mild angina. This form appears after the febrile period of scarlatina is over, or during convalescence. It is accompanied by symptoms of general and profound infection, and usually results in death.

Pseudo-membranous, non-diphtheritic angina is directly dependent upon scarlatina, though one cannot explain the fact that a membrane, non-pultaceous in character, is present. It appears from the first to the third day after the first appearance of the scarlatinal eruption, gives rise to severe local pains, but is almost always followed by recovery. As to treatment, every form of angina which occurs in the course of scarlatina calls for treatment. If the pain is severe, a one-per-cent. cocaine spray or a four-per-cent. solution, applied locally, may be used. If there is a pultaceous exudate upon the tonsils, applications of lemon-juice may be made several times daily. Warm gargles or injections containing three per cent. of boric acid or borate of soda, or four per cent. of tincture of benzoin, may be used frequently to keep the pharynx aseptic. Concerning the inhalations and vaporizations which are recommended in such variety for the treatment of diphtheria, the author does not speak with enthusiasm, and great confidence in their efficiency is believed to be illusory. If a system of tonics and forced alimentation can be thoroughly carried out in addition to other means, it may be attended with success.

A. F. C.

Garre: Bacteriological Investigations concerning Vaccinia and Variola. (*Centralb. f. Kinderh.*, May 28, 1887.)

In 1885 the author succeeded in obtaining cultures of cocci which were almost pure from material taken from vaccinia pustules in animals. Pure cultures were subsequently obtained with which bullocks were inoculated with partial success. The cocci were about half as large as *staphylococcus pyogenes*, and had no characteristic disposition. At ordinary temperatures they did not develop upon meat-peptone gelatin, but in the generating oven, at the temperature of the body, a grayish deposit was obtained upon aga-aga or coagulated blood-serum, which continued to show signs of vitality in an ordinary atmosphere, but could not be successfully cultivated upon a vaccination wound. Sterilized cow's milk was thickened by the cocci. Six bullocks were inoculated with the pure culture, total failure resulting in one case, small nodules in two, and true vaccinia pustules in the remaining three. Inoculation of guinea-pigs, puppies, and mice with the cocci produced no results. The author injected a pure culture into the cellular tissue of his own arm and into the scrotum of a calf. In neither case did any inflammation follow. An injection was also made into the anterior chamber of the eye of a puppy without producing iritis, and into the cornea of another with only a traumatic keratitis for a result. Frequent inoculations of human beings were made with the cocci, but none of them produced either local or general reaction, or gave any immunity from the usual results which follow vaccination with suitable lymph. The author also found cocci in lymph taken from patients with vaccinia and variola which developed similarly to those obtained from bovine vaccinia, and were equally unsuccessful in reproducing those diseases.

His attempts to obtain cultures from blood taken from smallpox patients were unsuccessful, the gelatin remaining sterile. From the bodies of those who had died from smallpox streptococci and diplococci were obtained, which died, however, after a few weeks. The vaccinia which was produced in the three bullocks referred to was reproduced in calves, the development of the disease and the suppuration of the pustules proceeding slowly, as is often the case when the disease develops under ordinary circumstances. A. F. C.

III.—SURGERY.

Braun: Intra-Uterine Fracture of the Tibia. (*Centralbl. f. Kinderh.* [abstracted], May 28, 1887.)

Injuries of this kind are believed to be more frequent than the records indicate, the author having seen five cases in his own practice. The most striking indication of such an injury consists in a decided curvature of the lower third of the bone, or an angular conformation of the parts, which may be so extreme that the foot will be pushed far backward and appear useless for walking. At the convexity of the bone there is almost always a fold in the skin, or a longitudinal scar, which is sometimes superficial, and at others seems to extend to the bone. Bleeding from this portion of the skin sometimes occurs immediately after birth. These changes in the skin may either signify that the broken bone has perforated it, the wound healing subsequently, or that the uterus has pressed upon the projecting surface, the supply of liquor amnii being insufficient. In connection with these fractures of the tibia one sometimes finds an absence of some of the toes, and a defect in or a total absence of the fibula. The latter condition obtained in sixteen of the twenty-seven cases which the author found upon record. The cause of the deformity of the tibia is believed to be due to a bending or a fracture of the bone, which is caused by some violence to the mother's body or else to the pressure of the uterus upon the limbs of the fœtus, rather than to defective ossification or rachitis. In the treatment of these cases if there is only slight deformity of the tibia, and a consequent pes equinus of moderate degree, nothing should be done during the first months of life; at a subsequent period the difficulty can be overcome by the use of a shoe with a very thick sole. If the deformity of the foot is more pronounced in connection with slight shortening of the tibia and decided contracture of the muscles of the fibula, tenotomy of the Achilles tendon and rectification of the bad position of the foot will be in order.

If the deformity of the tibia is so great that subsequent walking will be impossible, an early osteoclasis, or eventually an osteotomy of the cuboid bone, will be indicated. If the foot projects outward too positively it may be best to secure anchylosis at the ankle-joint, after directing it as well as possible into the natural position. A. F. C.

Conta: Pott's Disease below the Spinal Cord in Children, and its Consequences with Reference to a possible Future Accouchement. (*Jour. de Méd.*, June 19, 1887.)

The reference in the author's *brochure* is to that form of Pott's disease which affects the sacral region, and the conclusions are as follows:

1. *a.* In lumbo-sacral Pott's disease the changes in the bones may amount to simple erosion or to complete destruction. A single vertebra may be involved, or the entire lumbo-sacral region.

b. The intervertebral cartilages may disappear completely, even before the vertebræ are destroyed.

c. The spinal canal may communicate directly with the caseous tuberculous deposit.

d. The dura mater is almost always involved.

e. The nerve-fibres of the cauda equina may be involved both microscopically and macroscopically, or they may remain intact macroscopically notwithstanding the phenomena of partial atrophy in the muscles of the lower limbs. The nerve-fibres may be compressed by thickened dura mater, bony prominences, caseous matter, etc.

f. The crural and inguinal ganglia and those of the iliac fossa which are contiguous to the iliac vessels and to the vena cava inferior are, as a rule, engorged, caseous, or simply riddled with small tubercles or ulcers.

g. Abscesses consequent upon congestion are very common in this form of disease. They frequently recur and tend to work downward. They destroy the nerves, muscles, vessels, and periosteum with which they come in contact.

h. The muscles which are brought into contact with an abscess or with tuberculous matter may be entirely destroyed or be reduced to a caseous mass.

i. The vessels may be compressed by the enlarged glands, by caseous deposits, or by an abscess.

2. *a.* The principal indications of lumbo-sacral Pott's disease are protuberance, abscess, and partial atrophy of the muscles of the lower limbs. There may also be local pain, peculiar attitude and gait, enlarged inguinal glands, vasomotor troubles, and trophic disorder in the lower limbs.

b. Usually one limb is first affected, and then the other. Incomplete paraplegia may be present from almost the beginning of the disease.

c. Rectal examination is of great value in establishing a diagnosis.

The eruptive fevers occasionally act as causes in this disease. The disease should be differentiated from coxalgia, sacrocoxalgia, and abscess of the bones. In unfavorable cases the disease lasts about twenty months. Its prognosis is grave. Treatment may be immobility, with or without extension, opening of the abscess, injection of iodoformed ether, revulsives, and general hygienic measures. A. F. C.

Martin: "A Rare Congenital Deformity." (*Med. Rec.*, September 24, 1887.)

Female child; at birth weighed about eleven pounds. Presents anomaly of either complete absence or fissure of sternum. There is a breach of about two inches in continuity of bony thoracic wall, in space usually occupied by sternum, in its whole extent. The space is covered only by soft structures, which flap inward and outward with each respiratory act. The heart lies within this space, and can be readily grasped through its thin covering. There is a similar deficiency in the abdominal wall, the recti abdominis being separated or non-developed. There is also an umbilical hernia. Child is now four and a half months old.

May: Successful Œsophagotomy for the Removal of a Half-Penny swallowed over Three Years previously. (*Brit. Med. Jour.*, May 21, 1887.)

The patient was a boy of seven, who three and a quarter years before was seen to swallow a half-penny. A choking fit ensued, and he could not swallow at all for a week. Later, he got so as to be able to swallow a little, but sometimes food regurgitated. Since that time he had been in very poor health; was much emaciated, and suffered from a cough so that he came for treatment for consumption. His weight was twenty-five and a half pounds on admission.

He swallowed like a case of œsophageal obstruction. Impaired resonance and breathing were found over the whole right lung, and it was inferred that the right bronchus was obstructed. An obstruction was detected at the level of the manubrium of the sternum.

The œsophagus was opened by the usual incision upon the left side, and the coin found very tightly impacted, it being turned obliquely. A rush of air into the œsophagus followed its removal, showing the presence of a communication with the trachea.

The passage of a tube into the stomach for feeding was found impracticable, and rectal alimentation was used solely. On the fourth day, as he seemed dying of starvation, he was allowed to take a little milk by the mouth: some got into the trachea and produced violent dyspnœa. After this things went better, and in six weeks the wound was quite healed. He gained in flesh very rapidly. There seemed to be little or no tendency of the œsophagus to contract subsequently.

Bowlby: Pathological Specimens from Congenital Dislocation of the Hip. (*Lancet*, April 23, 1887.)

The patient, a girl, died at the age of thirteen, and had presented during life the usual signs of the disease. In the position of the normal acetabulum was a triangular depression, which was far too small to have accommodated the femoral head at any time. The floor of the depression was covered above by cartilage and its edges scarcely raised above the level of the surrounding bone. The upper portion of the acetabulum that formed by the ilium was deficient, and the cavity was formed by junction of the pubic and sciatic portions. The head of the femur rested on the dorsum ilii immediately above the deformed acetabulum and was here surrounded by a fibrous capsule. The ligamentum teres was undeveloped.

Mr. William Adams also presented two old specimens of the deformity, without histories. There was no disease at the joint, but the innominate bone was congenitally deformed; the acetabulum was shallow and flattened, the upper half of the prominent rim was entirely wanting; the innominate bone was narrowed below and elongated; the tuber ischii was everted, its ramus twisted. In all the specimens the femoral head was covered with healthy articular cartilage, but flattened generally.

Occasionally in these cases the round ligament was present; if so, it was greatly elongated.

Both the gentlemen firmly expressed the conviction that the methods of delivery could have nothing at all to do with congenital dislocation of the hip, since its essential feature was a congenital deficiency in acetabulum.

Pollard: Difficulties in Establishing Natural Respiration after Tracheotomy. (*Brit. Med. Jour.*, April 30, 1887.)

The first case reported was one where a child two and a half years old had worn a tube a year and seven months, where every means employed to enable it to dispense with it had failed. There had been tried catheterization of the larynx; a piece of rubber tubing had twice been passed from the mouth to the tracheal wound and left in position forty-eight hours, but without any benefit. Mr. Pollard then passed a tracheal catheter from the mouth through the glottis, and into the trachea some distance beyond the wound. It was retained thirty-one hours, and after its removal the child continued to breathe through the mouth. In a fortnight the wound in the trachea had healed. It was now six months since the operation, and the case remained cured.

In a second case a similar procedure was resorted to after three months' wearing of the tube. A small piece of granulative tissue was dislodged and coughed up. Pneumonia followed, but the patient eventually recovered perfectly.

In the third case granulation had been removed and the larynx catheterized, yet two years after tracheotomy the vocal cords were still adherent. They were separated, the glottis dilated, and the tracheal catheter passed as before. It was retained thirty-eight hours. In three weeks the patient could breathe through the mouth alone and the voice returned; but a month later the trachea had to be reopened, as the cords had again become adherent. This was a case of genuine stricture of the larynx.

In two of the cases reported the tracheotomy incision had divided the cricoid cartilage, and it was suggested that this method of operating might be the cause of the trouble.

Dauchez: The Diagnosis of Certain Accidents connected with Growth. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], August, 1887.)

The condition which is commonly recognized in connection with accidents occurring during the period of rapid development is an excessive development of tissues, especially the osseous tissues. This development is sometimes so rapid that there may be an increase in height of three to ten centimetres within a few weeks, and a tendency to osteitis, varying between simple pain and actual epiphyseal osteitis, at the femoral, radial, or humeral epiphysis, or even osteomyelitis in those who have reached adolescence. Two symptomatic types of these conditions have been observed,—1st, the painful type, with headache, epiphyseal pains, or neuralgia; 2d, the febrile type, with remittent fever, which may be either acute or chronic in its course, and is always complicated by periods of pain. Such symptoms, when carefully followed up, are likely to lead to the discovery of epiphyseal exostoses, whether femoral, tibial, or peroneal, or cardiac hypertrophy without valvular lesion, the disorder being neither rheumatic, syphilitic, nor paludal in character. Several cases are quoted in which more or fewer of the conditions referred to were discovered, and could be regarded only as lesions associated with rapid growth. From these cases it is also concluded that the maximum frequency of these lesions is between the ages of eleven and fifteen; that is, at the period of puberty; that the attacks of pain may be accompanied by irregular paroxysms of remittent fever, or by paroxysms of intense fever, headache, delirium, and general symptoms necessitating a careful examination of the joints or the viscera, and that the morbid condition may continue six months to four years. In the table of cases narrated the cause of the extraordinary growth was, in almost all of them, violent exercise. The type of the morbid condition was the painful rather than the febrile.

A. F. C.

Nota: **The Treatment of Kyphosis.** (*Rev. Mens. des Mal. de l'Enf.* [abstracted], August, 1887.)

The author has found Sayre's corset inconvenient, and has modified it by making one which is composed essentially of a pelvic girdle, which is the point of fixation, and from which, posteriorly and at right angles, two parallel bars spring, having a space between them large enough to accommodate the spinal column. Above they are joined by a cross-piece, at the ends of which are attached two supports, carefully padded, which, having been carried under and over the shoulders, are again fixed to the cross-piece at the top of the bars. The most important feature of the corset is a girdle, which is intended to cover and compress that part of the column which suffers from kyphosis, together with a few of the adjacent vertebræ above and below. This girdle or strap is firmly fixed at one end to one of the bars at the proper level, while the other end is supplied with three small straps by which it can be attached to the other bar and tightened to any desired degree. That part of the column which does not require compression is entirely free, the anterior parts of the thorax and abdomen being unconfined also, the treatment thus differing entirely from that with Sayre's corset. There are also no lateral nor subaxillary supports. The advantages which the author asserts as peculiar to his corset are,—

1. It supports the weight of the body and relieves the kyphotic vertebræ from too great pressure.
2. It immobilizes the vertebral column in extension.
3. It exercises no pressure upon the thorax to interfere with the respiratory act.

4. It does not restrain the movements of the limbs.

5. It does not exert too great pressure upon the projecting parts of the skeleton, and so obviates attrition and ulceration of the skin.

6. It does not interfere with the ordinary requirements of the body as to cleanliness.

7. It furnishes the patient with a more comfortable and lighter corset than those which are commonly used.

A. F. C.

Longard: Folliculitis Abscedens Infantum. (*Arch. f. Kinderh.*, Bd. viii. H. 5.)

The author concludes his investigations as follows:

1. Multiple abscesses in children, running a chronic course (folliculitis abscedens infantum), constitute a parasitic local affection of the skin, which proceeds from the sweat-glands.

2. The causes of infection are the cocci of *staphylococcus pyogenes*, which are transmitted by means of the child's clothing.

3. The different appearance of this lesion from the ordinary furuncle, the tendency to the formation of abscesses, the persistency of the condition of necrosis, and the long duration of the disease are caused by the different conditions of pressure in the atrophic skin of the patients.

4. Prophylactic treatment implies scrupulous cleanliness of the skin. If the abscesses have developed, they should be incised and washed out daily with a weak sublimate bath. The clothes also should be carefully disinfected. A. F. C.

Cartaya: Surgical Treatment of the Reflex Convulsions accompanying Dentition. (*Archiv. di Patol. Inf.*, May, 1887.)

The author had had occasion to observe the inefficacy of the means which are ordinarily used to overcome the convulsions of children during the first dentition. The theory which is sometimes advanced is that an inflammatory condition is excited during the period of ossification of the teeth, and is increased during the period of eruption, and that an irritation is set up which continues until the crown of the tooth has overcome the resistance which is opposed to it by the swollen and inflamed gum. The irritation of the terminal branches of the dental and gingival nerves is transmitted to the nervous centres, according to Brown-Séquard, Jaccoud, and Sarrazin, to be reflected upon their trophic nerves, the final result being the so-called reflex convulsions. These may occur suddenly to a child who has previously been suffering with dry and hot mouth, hard and painful gums, with feverishness and general irritability. The result is not infrequently death from asphyxia or syncope, nothing being done in the way of relief. In five cases which came under the author's experience he removed the offending teeth; recovery followed in three of the cases, the other two died from concomitant scarlatina. Such a plan is advocated for similar cases. A. F. C.

Bibliography.

TREATMENT OF DISEASE IN CHILDREN, INCLUDING THE OUTLINES OF DIAGNOSIS AND THE CHIEF PATHOLOGICAL DIFFERENCES BETWEEN CHILDREN AND ADULTS. By ANGEL MONEY, M.D., M.R.C.P., Assistant Physician to the Hospital for Sick Children, Great Ormond Street, and to the Victoria Park Chest Hospital. Philadelphia: P. Blakiston, Son & Co.

This volume is unlike the usual text-books on pediatrics, and its author has evidently realized the importance of noting unusual and unexpected clinical phenomena and their management. In the preface it is very succinctly and plainly stated that the work is intended for the senior student and practitioner, upon the assumption that they are acquainted with works on general medicine.

In the introductory he states that "it is the unexpected that happens in infantile physio-pathology," and illustrates the uncertainties of the physiology of infancy by reference to the frequent but insignificant irregularities of the circulatory system, and also gives a well-deserved thrust at those writers on pediatrics who still cling to the belief that an irregular action of the heart is indicative of brain-disease.

Chapter I., on the "General Treatment of Disease," shows very plainly that the author has kept abreast of the conservative class on infantile therapeusis. The dictum that "drugs should be avoided wherever possible" is a valuable hint to those who are accustomed to fill the child's stomach with therapeutic agents, regardless of their physiological action. The advice given, "to treat the child and not the disease," may be misleading to the young practitioner. Undoubtedly, when practicable, it is far better to give a palatable mixture than a nauseous one; but in our efforts to please the "cerebral cortex" we must not forget the efficacy of medicines by leaving too much to nature. In order that "the little pellet is (may be) neatly dropped into the region of the deglutition reflex" will necessitate refreshing the minds of the older practitioners, that they may find this particular spot. If the author has such dexterity in reaching the deglutition reflex, and administers the pellets so neatly with his "*magic, presto, fly,*" in a kicking youngster, his success has been more marked than that of his co-laborers on this side of the Atlantic. Again, if he can give us the secret of inserting *pills* into the child's rectum with his accustomed dexterity and neatness, he will receive our grateful acknowledgments. We entirely endorse the criticisms upon the clothing, and especially that "there is no scientific reason for keeping the belly bound down and tightly covered." An infantile dress-reform crusade is greatly needed, and its success will depend upon the efforts of the medical profession. The rules of hygiene, though not new, are worthy of practice.

Chapter II., on the "Principles and Practice of Feeding Infants and Children," contains some startling advice. After carefully reviewing the maternal and artificial feeding, our author says, "As a golden rule, no other food than milk should be given till the age of seven months." If the rule in England is to give *mutton-broth* and vegetable soup "for tiding over temporary difficulties," then the frequency of rickets and the large mortality of early life are easily understood. The "baby fascinators," or teats, "should not always be in the child's mouth." We say that such practice should never be tolerated. If children twelve months old are given the "breast of chicken, mashed cauliflower, and mashed potato," there must be ample opportunities for studying the digestive disturbances of infancy. Again, if, "when the teeth are fully developed and fill the jaws," the child is allowed Dr. Money's liberal diet, no wonder the doctor accepts and teaches "the views of Horsley, that there need be no essential difference between convulsions, epileptic fits, eclampsia, and epileptiform seizures," and that "the causes of convulsions are innumerable."

In Chapter XII. is the encouraging revelation that "recovery from tubercular peritonitis is common, from ulceration probably rare, from true tabes occasional." If Dr. Money gets such excellent results in these formidable diseases we congratulate him, for we are less fortunate. Again, "infrictions of simple oil may promote absorption of the infiltrations that glue the gut together." We will certainly recommend the importation of such a magic lubricant.

The arrangement of the book is very bad, and if it were not for the index it would be almost impossible to find the diseases by reference to the contents. For instance, Chapter V. treats of rheumatism, but at the end a little more than one page is devoted to ague, which looks very much as if the author thought the chapter on rheumatism was not long enough, and just put the ague in to fill up. Again, in Chapter II. we have simple gastric catarrh treated, and in Chapter XII. "a further development" in acute gastric catarrh.

Chapter XVI., on the "Acute Specific Fevers," is admirably written, and shows that the author is alive to the latest antipyretic measures.

The treatment in the Great Ormond Street Hospital is certainly very various, and one can choose between the time-honored "fever mixtures" and the most recent antipyretic remedies, and between the vegetable astringents and the germicidal synthetical preparations.

As this is an English book, intended for an English-speaking people, it would have been better to have used the English equivalents of *qua*, *bêtes noires*, and *aussitôt que possible*.

The work exhibits an inexcusable lack of care in the proof-reader, as errors, grammatical and typographical, and in punctuation, are seen throughout its pages.

Finally, while there are many praiseworthy points in the work, it can only be considered as a compendium of treatment not calculated to enrich the store of knowledge in a well-selected medical library.

SAMUEL S. ADAMS.

AN interesting paper on "The Management of Abscesses in Connection with the Bone-Diseases of Childhood," by V. P. Gibney, A.M., M.D., Professor of Orthopedic Surgery in the New York Polyclinic, will appear in the November ARCHIVES.

A DESIRE to complete the series of articles by Drs. Keating and Edwards, on "Heart-Disease," in this volume has crowded out other interesting papers.

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THE MANAGEMENT OF ABSCESSES IN CONNECTION WITH THE BONE-DISEASES OF CHILDHOOD.

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Professor of Orthopedic Surgery in the New York Polyclinic.

THE above must serve as a title for some remarks upon the subject of cold abscesses. The author regrets very much that he is unable to give an argumentative paper, because there is as yet in the medical and surgical mind a certain amount of obscurity whenever this question presents: What shall be done with an abscess if it comes from "Pott's disease," or "hip-disease," or "white swelling?" If the question is asked a general surgeon, whether he be but recently admitted to the profession, or whether he be old in the service, the answer is almost universally this: Follow the general surgical rule, and let out pus whenever and wherever found. My intercourse with surgeons and my reading inclines me to the belief that the above advice is nearly always given.

If the question be asked an orthopedic surgeon, irrespective of the country in which he practices, the answer will be about this: Do not interfere. There are modifications of this answer, but the general rule is to pay little attention to the abscesses, but direct your efforts to the protection of the bone or joint whence the abscess comes. It is a great pity that the question cannot be settled definitely by reliable statistics, which could be easily furnished by certain hospitals and institutions. Such work, however, is laborious, and is usually left to the junior members of the house staff, who cannot appreciate the value of reliable statistics. The average history-taking and note-making are certainly not conducive to scientific progress. In discussing this question, then, the writer reluctantly deals with opinions not fortified by statistical evidence.

Even before the days of antiseptic surgery it was the custom among surgeons to open abscesses freely, and the claim was made that the patient did better for such treatment. On the other hand, it was the impression at the hospital for the ruptured and crippled, twenty years ago, that patients whose abscesses were opened were sure to die from prolonged suppuration. It was thought that admission of air to the sac proved harmful,—developed septicæmia. Since the advent of antisepticism the claim is that the mortality is greatly diminished, and that the abscess-sacs heal promptly. Why such claims should be made so positively I am at a loss to understand.

It must be remembered that patients in hospitals are not retained longer than seems necessary to their comfort; that just as soon as they can be discharged with safety they are sent home; that it matters little whether the sinus is closed entirely or not; that a slight discharge therefrom is of little surgical significance. It must also be remembered that it is not an uncommon thing for such an abscess to heal and to reopen subsequently within a few weeks or a few months. It is the same old abscess, and the behavior is alike whether the knife is used or whether Nature attends to the opening. It is true that when an incision is made under antiseptic precautions there is, as a rule, no rise of temperature; but it should be remembered that the health is not impaired by slight rise of temperature, but by prolonged suppuration, which undermines the health, and which serves to develop lardaceous degeneration. It is no argument, therefore, for a surgeon to boast that the temperature has not been above 100°, or above 98½°, during the whole term of hospital sojourn. If he could tell us the final results of his cases, results obtained long subsequent to the discharge from the hospital; if he could tell us how many cases in a given number were still soundly healed, a year, say, after leaving the hospital, how many had sinuses still discharging freely or slightly, how many had enlarged liver and a low specific gravity of the urine;—if the surgeon could give us this information in statistical form, then claims for superiority of treatment would be of value.

The writer recalls a case now that was treated successfully in a hospital; the abscess was opened under antiseptic precaution, the proper dressing was applied, and at the end of a few weeks the patient was discharged with the sinuses practically closed. Several months later the discharge was quite abundant, and so it has continued to the present time, now two or three years subsequent to this hospital treatment. The question of prime importance seems to be this: not whether the abscess should be opened or left alone, but how the abscess shall be managed. In my opinion, it matters little whether the surgeon chooses to open the abscess with the knife, or whether he chooses to aspirate, or whether he chooses to leave it entirely alone. He can take any plan he likes; but if he fails to protect the bone or the joint with suitable support he will get about the one result, and that is this: the abscess will be followed by others, and the sinuses will close only to reopen. Unless Nature herself finds some protection to the bone, and can succeed in arresting the disease, the suppuration will continue until amyloid changes are developed in the internal organs, or until a high state of exhaustion ends in death by asthenia. Cases that have come under my observation in hospital justify me in the above statement.

In a visit to some of the London hospitals during the past summer I saw children whose abscesses had been opened and thoroughly drained, but at the same time they had protective treatment, and they did well.

At Liverpool, among Mr. Thomas's patients, I saw many abscesses practically innocuous; in fact, Mr. Thomas told me that he rarely had occasion to open abscesses. The protection afforded by his splints, which immobilize the joint, seems to make incision and drainage unnecessary.

In Manchester, Mr. Wright has excellent results where surgical means have been employed, yet I observed that the joints were well protected in immobilizing splints.

The argument, then, I wish to make is this: That if the surgeon will see that the spine, or the hip, or the knee, or whatever joint is endangered by disease;—if he will see that sufficient protection is afforded such a joint during a long period of time, it will make little difference how he manages his abscesses. As supporting this view I beg to submit a few cases taken at random.

A woman, twenty years of age, married, of good physique, came under my observation in February, 1886, referred to my clinic by my friend Dr. Hemmingway. She gave a long history of suffering. Suffice it to say that the diagnosis was ostitis of the lumbar spine with deformity already present. When she presented for examination I found a deep-seated psoas abscess on the right side, producing the characteristic deformity. She suffered much from anterior crural neuralgia. I succeeded in applying a good plaster-of-Paris jacket, which, after a little while, gave her much comfort; still, she complained occasionally of pain down the limb. The hot douche was employed with some relief, yet the abscess grew slowly larger. Finally, in the following September, I aspirated the sac under cocaine, removing eight or ten ounces of thickish pus, and she assisted me in the operation. She has been well supported by the plaster jacket (great care has been employed in this matter), and she has learned how to appreciate a good-fitting support. A single aspiration sufficed to give her relief, and for weeks prior to this she was suffering at times most excruciating pains. All pain subsided by the next day, and there has been no return. On subsequent occasions I have tried, and without success, to find the abscess by palpation. In June last I applied a jacket, as she was to spend the summer in Sweden. I confess I was somewhat surprised at the prompt and, up to the present time, continued relief that she experienced from a single aspiration. I do not know to what else I may attribute this good result if not the support secured by the jacket.

A boy, four and one-half years of age, came under treatment in the winter of 1885–86, suffering from ostitis of the lumbar vertebræ with double psoas abscess. At the time the abscess had not opened, and was appreciable only by palpation and by the deformity of his thighs. I succeeded, after a while, in giving him relief; in the spring, however, one of the abscesses had come quite near to the surface, and it was opened. At the same time, however, the jacket was kept applied, but it was difficult to secure a proper purchase by reason of the disease being seated so low in the spinal column. The boy suffered considerably during the summer and fall. The second abscess opened spontaneously; both continued to discharge. Finally, in November, 1886, I applied a Taylor "spinal assistant," from which I got better support than I could with the plaster. Three or four sinuses continued to discharge during the winter, yet they gave him very little trouble. By the 1st of January, 1887, he was going about with very little discomfort. The mother learned to take care of the dressing, and I even taught her how to keep the brace applied. Still, I made a point of seeing the boy once a week, and was thus enabled to superintend the apparatus quite closely. When I saw him in the early part of the summer his general health had improved wonderfully. He was able to run about quite actively, the deformity of the thighs had quite disappeared, the sinuses on one side had quite closed, while those on the other were merely oozing a little at times, and his prospects seemed very fair. In this case it will be seen that the plaster of Paris was ineffectual. The details of the case, given more fully, would convince one, I am sure, of the efforts we made to employ the jacket. The changes for good were most marked as soon as the Taylor brace was properly fitted. The parents were very attentive, and, at the same time, very intelligent, so that I had the benefit of their co-operation.

In striking contrast to this take a boy, nine years of age, who came to my clinic about one year and a half ago, with disease of the lumbar spine, first recognized by a psoas abscess on the left side. His mother's attention was first called to a defective gait, the boy walking as if he had hip-disease. The cause of this was found in the iliac fossa, and the spinal deformity was easily recognized. For six or eight months he wore a jacket, and during this time the abscess remained to all appearances innocuous. His attendance then became irregular, his jacket began to break down, and last spring it was found that the abscess had increased to large proportions. It was then aspirated, and a second aspiration was made about two weeks subsequently. This was not very satisfactorily done, and the patient had become somewhat demoralized. The attendance was not so regular again. In the early part of the summer it opened spontaneously, and the discharge was very profuse. At the same time there appeared malarial symptoms complicating the hectic fever. The jacket, which was at best a poor one, was not worn very faithfully. On my return this fall I find that another abscess has appeared on the right side, has opened, and a third one still is presenting over the right hip. I find the jacket entirely useless. This is a clinic case: he lives at some distance from the Polyclinic, and it is very difficult under the circumstances to give him that attention which he deserves. How much he will improve when he gets a new support remains to be seen.

Take the case of a little girl, five years of age, who came to me in November, 1886, on account of most distressing pain in the right loin and down the thigh. I found that she had a slight projection of the second lumbar vertebra, and I had no difficulty in recognizing the disease; at the same time I could recognize no abscess in either iliac fossa. There seemed to be merely an irritation of the psoas muscles. The application of a jacket was not followed by the relief that I had anticipated. I applied several jackets, thinking that all that was needed was a good fit. The patient would get temporary benefit, and would decline to walk, would rest poorly at night, and was altogether in an unsatisfactory condition. I made several examinations in the iliac fossa for an abscess, but failed to find anything more than a little resistance to hyperextension of the thigh. Finally, I discontinued the use of plaster and got a very good fit in a Taylor brace. She still complained despite all this, and after another search, one day, I discovered deep in the right iliac fossa, upper portion and to the right side of the spinal column, a long fluctuating tumor. The fluctuation was not distinct; indeed, it was more a sense of tension. I had no difficulty now in recognizing a deep psoas abscess, and in view of the failure to get relief from even the best mechanical appliance I introduced a large needle of an aspirator, under an anæsthetic, and succeeded in withdrawing about two ounces of thick creamy pus. The Taylor brace was then discarded and the plaster-of-Paris corset employed. The first aspiration was made on the 1st of June, was repeated on the 20th, and again on the 27th. Her relief dates from the first aspiration. I did not see the patient during the summer, but on the 15th of September she walked into my office quite briskly, head erect, and without any appreciable lameness. I made a careful examination and failed to detect any fulness along the course of the psoas muscles. There was no deformity of the thigh; she had enjoyed her summer; her health had improved. She is still wearing the plaster corset, and the mother did not care to go back to the steel brace. The deformity of the spine has not increased. I was strongly inclined, while managing this case, to transfer my faith from the plaster jacket to the Taylor brace, especially as the child seemed to improve for about a week after the steel apparatus had been applied as in the case reported above, yet this little girl felt much more comfortable in the plaster corset, even before the abscess was discovered, and after relief was afforded by the aspiration the jacket has been all that could be desired in the way of a support.

The case of a little girl, seven years of age, from Massachusetts illustrates very fairly, I think, the value of the plan I advocate. This child came under my observation some time in October, 1885, and the father came with prejudice against the plaster jacket, because the child had been wearing one for a year and had suffered considerably during this time. The deformity was in the lumbar region, centring perhaps in the body of the fourth. I soon persuaded him that I could apply a jacket which would afford relief, and accordingly a light solid jacket was applied the same day, and she was sent home that afternoon. There was no abscess to be discovered at this time. The father was instructed to report within three or four months at furthest, but *eight months* elapsed before I saw the child again. She did not come now because of any pain and discomfort, for she had been running about quite actively during this whole period. She came because about two weeks previously her gait had become very awkward, and the father at this time discovered a fulness about the right hip. The jacket was in as good condition as on the day of its application, and seemed to fit quite well. On removing it for examination, however, there was found a large tumor filling the right gluteal and the right femoral regions. There was also a tumor filling the right iliac fossa. The joint movements were smooth. These tumors had come on quite imperceptibly; had given rise to no pain and no constitutional distress of any kind so far as the parents had observed. It was very inconvenient to have her remain in the city for any special treatment of the abscesses, hence it was decided to make an exploratory puncture, and send her home the same day, with instructions, however, to the local physician. The large needle was inserted into the gluteal tumor, and after punctures in several directions about ten minims of pus was removed. A new jacket was applied, and the patient was not seen again for six months, at which time I found the tumors diminished at least one-half. There had been no occasion whatever to interfere,—that is, no urgent symptoms presented. About four months elapsed again before she appeared, and there was then still less occasion for interference; in fact, the tumors had about disappeared. The last note was on the 21st of September, when no traces of abscess could be discovered.

I could cite other spinal cases wherein the abscess has disappeared, or where by very simple means the patient has been relieved of the abscess. A few cases of "hip-disease" may be mentioned, and the first of these is that of a female child, sixteen months of age, who was referred to me by Dr. W. Eager, of Middletown, N. Y. This was in the early part of 1885, and the history given at that time was this: In the latter part of the summer of 1884 the child began to favor the right limb as she walked. She had just begun to walk, and the lameness was quite perceptible. The little patient would cry out whenever she brought her weight upon the limb or when the foot was moved. The usual starting-pains during sleep were present. She suffered very little throughout the day unless handled. The parents, who came with the child, gave an unexceptionally clear family history, and yet at the same time the mother was developing consumption, from which she died nearly a year later. The limb was very much deformed, and it was difficult to secure a satisfactory examination by reason of the soreness. A simple splint without the rack and pinion was applied a few days after her first visit, and she was sent home. It was nearly three months before I saw the patient again; then the splint rubbed so that for the past few days it had been causing some pain, hence was removed. The apparatus, however, despite the lack of attention, had succeeded in overcoming the deformity, and had rendered the child very comfortable. There was at this time, however, much infiltration in the groin, which seemed to point to an abscess. It was nearly six months before I saw the child again, though the splint had been kept applied quite faithfully, and the limb was now parallel with its fellow. There was by this time an immense abscess on the inner third of the thigh extending around over the hip. There was no pain of any kind, and, as the skin was not tense or discolored, I continued the previous treatment without further change. Three months later the abscess filled the whole anterior portion of the thigh, and the child was suffering some inconvenience by reason of the tension. Under chloroform this was opened antiseptically, and thoroughly washed with the bichloride solution, one to two thousand. A large drainage-tube was inserted, wood-wool dressing was used, and over the whole a plaster-of-Paris bandage was applied. The child was sent to her home in the country the same day. Ten days later she called, and on removing the dressing there was found no discharge through the drainage-tube, and the sac had quite collapsed. The tube was removed and a simple dressing employed; at the same time the splint was reapplied. Two months later when she called the abscess had healed; there was a dense cicatrix, the limb was quite straight, and the child was doing well. This was in February, 1886. I have seen her at intervals of two or three months from that time to the present, and there has been no untoward symptom at any time. Although her attendance is very irregular, yet the splint has been worn quite faithfully, and the value of this apparatus has been fully appreciated by the family. At the last observation the limb was less than one-half inch shorter than its fellow, was parallel with it, and there was motion over an arc of nearly ninety degrees. Her general health was excellent, and the prospects for almost a perfect limb seemed very flattering.

In July, 1884, a boy, seven years of age, was referred to me for treatment of disease of the hip; there was shortening and atrophy of the limbs, with a history of lameness dating from the March preceding. There was some fulness about the hip, but no fluctuation at any point. It is sufficient to say that he presented all the signs that go to make up a genuine case of ostitis of the hip. I soon succeeded in getting a long splint applied, and there was nothing worthy of note to interrupt the treatment except the appearance of an abscess in January, 1886. This was situated on the outer side of the thigh, and extended around the hip. The tumor increased slightly in size, caused no inconvenience whatever, until an attempt on my part to interfere with it. This was in the fall of 1886, when I thought it might be well to aspirate, and accordingly I aspirated. A few days after the second aspiration the boy suffered considerably, the parts inflamed, and it looked as if erysipelas had set in; but this was avoided by the employment of ice-bags, and a few days later I aspirated again. He had no further inconvenience, no further pain, and inasmuch as there seemed to be very little fluid in the sac I did not repeat the aspiration again, but on the 23d of November whatever remained found its way out through a spontaneous opening. By the 30th of December the sac had collapsed, the wound was healed. There has been no reopening from that time to the present; indeed, there has been no refilling of the sac at any point. He still wears his splint, has long since given up the high shoe, and his limb is about equal in length with its fellow. There is in this case very decided atrophy, yet the point of interest is, that his abscess only caused him trouble on one occasion, and that was pretty soon after aspiration was resorted to. I believe now that if I had never touched the abscess it would have pursued an easier course than it did.

In the spring of 1886 a boy, four and a half years of age, from South Norwalk, Connecticut, came under my care for treatment of ostitis of the hip. His disease dated from the June preceding. The splint had been applied shortly after the appearance of the first symptoms by the family physician, and thus the joint had been well protected. At the time he came under my observation the hip was absolutely fixed, was quite tender, yet the limb was in good position. There was already an abscess on the outer aspect of the thigh, upper fourth, which had lasted for some months. I simply contented myself with getting a good-fitting apparatus, one in which he could go about with comfort, and the abscess was left to take care of itself. Suffice it to say that during the following winter the abscess opened spontaneously; another formed and pursued the same course, but at no time was the boy confined to his bed. His general health continued good, and the only inconvenience we had was the necessity for dressing the parts; this the mother learned to do quite satisfactorily, and on the 20th of September the following notes were made: "There is a large cicatrix extending down to the bone between the posterior and the anterior superior spinous processes. Along Poupart's ligament is another deep cicatrix. His angle of deformity is one hundred and fifty-five degrees. There is a small amount of motion at the hip; the limb can be abducted over a small arc. He stands with his spine quite straight, and can walk without any splint."

The right limb measured nineteen and a half, the left twenty.

It so happened that another patient from South Norwalk, a boy two years of age, came under treatment in July, 1885. His disease was ostitis of the hip, well advanced in the first stage, dating, it seemed, from the fifteenth month. He was in the midst of an acute exacerbation, and it was a long time before I could get a splint fitted to my satisfaction. The boy soon began to improve, became quite active, yet during the past winter an abscess formed, appearing on the outer side of the thigh, upper fourth. I did not see the child often by reason of the mother's inability to come to the city, and when the abscess had reached immense proportions I determined to open it, not because of any suffering, but it seemed "the proper thing to do." She did not come at the appointed time, however, but when she did come the abscess had already opened spontaneously, and the mother had learned how to care for it. It closed within three or four months, and by the latter part of March there was no discharge. Quite recently, on examination, I found the limb was parallel with its fellow, and that there was motion over a small arc.

September 16 I had the opportunity to examine him again, and made the following notes: "His general health is excellent, he runs and plays, so the mother reports, quite actively; the limbs are equal in length; two deep cicatrices mark his thigh along the upper third. The limbs can be extended to an angle of one hundred and seventy-five degrees, can be rotated over about one-half of the normal arc. He still wears the splint for a protection, yet there seems to be little need for its continuance."

Take now the following case of a girl nine and a half years of age, an orphan, with numerous aunts. I saw this girl in November, 1886, for the first time. She had been lame for more than a year, was suffering from an acute exacerbation at this time, had an inch difference between the length of the limbs, and there was motion, if made carefully, to ninety degrees. It was nearly a month before I succeeded in getting the splint applied, and then many objections were urged by friends. She lived in the country, twenty-five miles from the city, and I almost despaired of doing anything with the case; still, my instructions were very explicit and not numerous. They were followed pretty well, and the girl did better than I expected. It was a long time, however, before she began to get about with comfort and ease. In April of the present year I discovered an abscess on the anterior aspect of the thigh, upper fourth. By the 15th of June the abscess had attained considerable size, and, while it was not giving her much annoyance, I determined to aspirate, with the intention to repeat it later. I removed about an ounce and a half of pus of thin consistency, and a firm compress was applied over the sac. On the 27th it was repeated, with the result of removing a smaller quantity. About this time I left the city, but gave instructions to the guardians that on the slightest occurrence of pain she should be brought to my *locum tenens.* The child was not brought to the city before the 4th of October, and this was the report given by one of the aunts: Early in July the abscess refilled, rapidly grew larger, and a local physician was called. He decided that it must be opened at once, and proceeded in the usual manner. The splint was dispensed with, an ordinary weight and pulley employed, and for several weeks the sufferings were great. When I saw her she was pale, timorous, anæmic to a high degree, and the sinuses were still discharging quite freely. The weight and pulley, from what I learn, had been inefficient as a means of traction, and the splint had finally been reapplied by the friends. On occasion of her visits to me I took special pains to get a good fit, and insisted upon seeing her a week later; this was the 13th of October, and she has had much ease for at least a few days. The discharge is much less and she begins to get about again.

My deductions from this case may be biassed somewhat, but I feel morally sure that if the abscess could have been opened and the splint had been well adjusted spasm would have been prevented, protection would have been afforded the bone and the joint, the results would have been much more satisfactory, the little girl would have suffered much less, and the course of the abscess would have been more benignant. However, the case is presented simply as a negative one in connection with the preceding.

As I said in the beginning, it is not my purpose to mention the different methods of treating abscesses. I could refer to a paper by Dr. Judson, published in 1885, upon the management of abscesses in connection with hip-disease, in which paper a strong argument is made for the method of non-interference; I could refer to views expressed by prominent friends in this city, both in orthopedic surgery and in general surgery, wherein the most varied opinions are given; I confess to a certain fascination about a method I saw practised by Mr. Edmond Owen, of London,—viz., the opening of the abscess and the employment of through drainage; still, all these methods, in my opinion, are of use chiefly when protection is given to the bone.

The purport, then, of this paper is not specially the management of the abscesses, but the management of the case; the aim is to direct attention to the lesion itself, to impress upon the practitioner the importance of immobilization, rest, and protection to the parts. The writer feels sure that if this is practised it will make little difference what course is pursued when abscesses appear.

I feel that my task would be incomplete without some mention of the treatment of abscesses by means of solutions of iodoform. From an abstract prepared by Dr. Junker in the London *Medical Record,* August 15, 1887, I find the following points worthy of interest (the original paper, however, appeared in *Der Fortschritt,* No. 10, May 20, 1887, and was written by Wyss):

Fabricius, of Aquapendente, employed as early as 1619 injections of wine or oxymel. Dupuytren made injections of hot wine. Abeille and Boinet in 1849 used injections of tincture of iodine, which treatment had great repute for a long time and was alleged as highly successful. It was on the recommendation of M. Verneuil, in 1883, that injections of various kinds of solution of iodoform were employed. He reported his results before the Congrès de Chirurgie in 1885. They were published in the *Revue de Chirurgie* the same year. His preference was for iodoformized ether. The methods were fully described in the treatise of Dr. Thuan, Paris, 1887.

The abscess is emptied as completely as possible of pus by means of a puncture and aspiration, which is followed by an injection of iodoformized ether. The strength of the solution is five per cent. of iodoform, but the stronger solution is ten per cent., each of which is used according to indications. The weaker solution is used when large cavities have to be filled, while the stronger is used for smaller cavities. The quantity of fluid injected varies according to the size of the cavity, but should not contain more than four or five grammes of iodoform. The punctured wound is then closed with iodoformized collodion and layers of cotton-wool.

It is reported that the pain caused by the operation is sometimes very keen, but passes off in the course of a few hours. The abscess after the injection becomes more or less tympanitic by reason of the volatilization of the ether. This condition continues for three or four days. The breath of the patient smells of the ether during from twenty-four to forty-eight hours. In the most favorable cases the tumor after one or two injections gradually diminishes, and after a certain time only a hard, solid mass is found, which by degrees is converted into a small prominent nucleus. In other cases the abscess fills again, and requires repeated punctures at intervals of from two to four weeks. In a third group of cases the abscess heals after a spontaneous rupture. It is a curious fact, however, that the recovery in cases is much more rapid than if no spontaneous rupture had taken place. Again, there are cases which are not modified or benefited by the puncture. It is said, also, in this paper that these injections are not without inconvenience, and even dangerous,—viz., sloughing of the skin, more or less extensive subcutaneous ether-emphysema.

In a case reported by Dr. Boeckel in the *Gazette Médical de Strasbourg*, July, 1885, sudden death took place during the operation. Recklinghausen, who made the autopsy, discovered a communication of the abscess with the subclavian artery.

Billroth uses as an injection a solution of ten per cent. of iodoform in glycerin, and his injection is made through the same trocar which has served for the evacuation of the pus. Billroth's results are said to be most satisfactory, with this drawback, however, that the treatment is generally protracted over several months.

From a study of the paper I confess that I am not prejudiced in favor of this method. Nothing is said here about any protection of bones or joints diseased; and if no such treatment has been employed, then we can scarcely compare results with the method I have advocated in the present communication.

DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.[1]

BY JOHN M. KEATING, M.D.,

AND

WILLIAM A. EDWARDS, M.D.

(Continued from October Number.)

ANEURISM.

Aneurism and atheroma of the aorta.—For many years the existence of this condition in infants and young children was totally denied; however, Roger,* in 1863, recorded a case of aneurism of the arch of the aorta in a girl of ten years of age, and Herveux remarks that out of the five hundred and fifty-six cases of aneurism reported by Crisp, five alone appeared in individuals of a few years up to twenty years.

Again, of ninety-eight cases of aneurism, but one was found in a person under twenty years of age.

One case of abdominal aortic aneurism is recorded as occurring in a child aged fourteen years,† and Broca, in a treatise on aneurism, relates one case of aneurism of the aorta in an infant of one month.‡

A case is reported (Phaenomenow, *Arch. für Gynæ.*, 1882) of a fœtus who presented an aneurism of the abdominal aorta ten centimetres wide and eleven centimetres long. It was situated between the origin of the renal arteries and the bifurcation of the iliacs. Microscopic examination showed its walls to be composed of the layers of the arterial coats.

Sanné (ibid.) made an autopsy in a child, aged thirteen: the arch of the aorta was increased in size and very atheromatous; on the convex superior portion (transverse arch) was to be seen

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* Bull. de la Soc. Méd. des Hôp., Paris, 1863, p. 499.

† Bull. Thérap., 1836, p. 393.

‡ Sanné, Rev. de Méd. L'Enfance, February, 1887; also Edinb. Med. Jour., August, 1887, p. 188; also Med. and Surg. Reporter, October 22, 1887, p. 549.

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a sacculated aneurism whose orifice of communication with the aorta was partly closed by cretaceous deposits; the aortic valves were insufficient, stenotic, and atheromatous. The pericardium contained several ounces of serum, and the left ventricle was hypertrophied. The same author has seen two cases, aged respectively two and three years, with marked general atheroma.

Moutard-Martin* contributes the clinical and post-mortem notes of a child, aged two, who presented chronic aortitis, with contraction and stenosis of the aortic valve, hypertrophy of the heart, chronic pericarditis, and loud murmur. The aorta was two or three centimetres higher in the chest than normal, and was very atheromatous. Norman Moore† exhibited to the London Pathological Society a specimen of aortic aneurism taken from the body of a child aged five years. *Sex* in early life does not bear such a direct relation to the production of aneurism as it does in adults, in whom the disease is more frequent in males than in females; this is to be accounted for in great part by the fact, as stated by Beneke, that the blood-pressure during childhood is about the same for both sexes, but from puberty onward it is greater in the male.

Sufficient cases have now been cited to show that aneurism and atheroma of the aorta may occur at any period from fœtal life upwards, nor does youth protect the *cerebral circulation* from atheromatous degeneration and aneurismal dilatation, as the case of aneurism of the middle cerebral artery in a boy, aged twelve, recorded by West, will show:

Boy had mitral insufficiency. At eight years of age had had scarlet fever and dropsy, afterwards some rheumatic joint-pains. For two years had dyspnœa. Four days after admission to hospital was suddenly seized with headache and vomiting; shortly afterwards became drowsy and had several fits, though none of them were severe. No paralysis was detected, but the drowsiness gradually deepened into coma, and the boy died about twenty-four hours after the commencement of head-symptoms.

Post-mortem.—All the loose tissue at the base of the brain was distended with blood, which tracked in all directions upward towards the surface of the brain, and downward along the medulla and cord, and on both surfaces of the cerebellum. All the ventricles, the fourth included, were filled with recent blood-clot. The source of the hemorrhage was an aneurism of the left middle cerebral, of the size of a small pea, about an inch from its origin. The walls of the vessel were very atheromatous and brittle, although elsewhere they were perfectly healthy. The aneurism had contracted dense adhesions all around, and had ruptured into the lip of the descending cornu of the left lateral ventricle. The blood had filled both the lateral ventricles, and had then spread by the transverse fissure to the exterior of the brain, chiefly along the base, around the crura cerebri, over the cerebellum, and round the crura cerebelli to the fourth ventricle. There was no evidence of embolism in the diseased artery.

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* Bull. Soc. Anat., 1875, p. 775.

† Trans. Path. Soc., 1882, quoted by Shattuck, Boston Med. and Surg. Journal, Sept. 22, 1887, p. 280.

The pericardium was universally adherent, and the mitral valve much thickened and covered with numerous recent vegetations. The other organs were healthy.

Osler* records an aneurism of a branch of the anterior cerebral in a boy six years of age, being one of the youngest cases on record. The boy was brought to hospital unconscious, with feeble pulse, pale face, eyes and head turned to the right, and left hemiplegia; death in six hours. He had fallen from a hay-loft three weeks before, but he recovered rapidly from the effects. There was meningeal hemorrhage at base and in the longitudinal fissure. An aneurismal sac was found imbedded in the calloso-marginal fissure just where it turns vertically upwards. The rupture was on the meningeal surface, but hemorrhage had extended into contiguous portions of the brain; the arteries were not atheromatous, presumably altogether normal, and the heart was healthy.

The symptoms, physical signs, modes of termination, and treatment of aneurism in the child are precisely similar to those in an adult, and it would be superfluous to recapitulate here, as the subject is so fully covered in the various standard text-books.

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* Canada Med. and Surg. Journal, 1886. This case is referred to by Sachs, Journal of Mental and Nervous Diseases, Aug., 1887.

Care, however, must be exercised in the diagnosis of aneurism, as mistakes are by no means uncommon. Hare* has recently recorded an interesting case of spurious aneurism of the innominate artery in a young girl aged seventeen. In this case the most definite signs of true aneurism were present, yet the post-mortem proved the entire absence of any lesion of the blood-vessel. The physical signs were characteristic and supposed to be very diagnostic, as several expert physical diagnosticians saw the case, one of whom lectured upon it as a text of aneurism in the young. The vessel, when examined at the section, seemed to be a little relaxed, and somewhat more elastic than normal. The aortic valves were extensively diseased, all the others healthy; the girl was weak, anæmic, and hysterical. The thyroid gland, during the early developmental stages of exophthalmic goitre, presents some signs which simulate an aneurism.

HYPERTROPHY AND DILATATION.

We are not at all apt to confound these conditions, but it is better to consider them together, as they so generally exist at one and the same time in a given case.

Between the ages of three and eight years the difference in the size of the heart is marked. Guersant states that the left heart is the larger, in the proportion of one to three. At this early period more work is required of the left side in order to send the blood actively to the periphery of the body; we also note the fact that the arteries are equal in size with the veins, whereas in an adult the veins are the larger.

Three forms of hypertrophy have been described, as simple hypertrophy, eccentric hypertrophy, and concentric hypertrophy; the former being a simple increase in the thickness of the muscular wall, the second an hypertrophy accompanied by dilatation, the former being in excess, however; the third is supposed to be a condition of hypertrophy in which the cavities are contracted.

Hypertrophy and dilatation is somewhat frequent in early life as a consequence of the various lesions of the valves or pericardium; in other words, the same disorders which bring about hypertrophy in an adult will also set the process on foot in a child.

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* Med. News, Oct. 1, 1887, p. 888.

Aortic and mitral regurgitation are peculiarly prone to give rise to a dilated hypertrophy, as the cavity or cavities are receiving two streams of blood under increased pressure. Dilatation is often established by the many pulmonary affections of early life. Rillet and Barthez say that under these circumstances we are much more apt to have dilatation than hypertrophy. Displacement of the heart from a pleuritic effusion and deformity of the thorax are potent causes of the condition in the young. Some authorities consider that permanent enlargement or a hypertrophy may supersede the condition of cardiac degeneration seen in systemic fevers, or the softening of a myocarditis, which was secondary to peri- or endocarditic inflammation. The latter is well illustrated by the case of a child eleven years old, reported by Guersant, who was attacked by acute rheumatism, accompanied by hyperpyrexia, soon developed extreme dyspnœa and marked palpitation; pulse irregular and intermittent; extremities cold and œdematous, bulging præcordia, excessive action of the heart; bruit at apex and in axilla.

The autopsy revealed a right pleural effusion with false membrane, an adherent pericardium, and an enormous cardiac hypertrophy. Bamberger also reports the case of a child aged eleven, with acute rheumatism and pericarditis, in which the hypertrophy was well marked, and arose with great rapidity. A definite cause of hypertrophy which all who treat the young must clearly recognize and guard against is repeated violent effort or exercise with the arms, as gymnastic exercises, rowing particularly. This change in the cardiac walls is brought about in two ways. An important factor is the excessive cardiac action suddenly produced; secondly, the constriction of the arteries and the obstruction to the circulation caused by the rigid muscles crossing the arteries and opposing the passage of blood.

The right cavities are very apt to be affected in swimming or running contests or in excessive diving. All these sports are becoming a part of the regular college curriculum, fortunately, however, in most cases under the direction of skilled instructors, many of whom are at the same time physicians; nevertheless, it is well for us, in those families who are under our care, to from time to time inquire into the condition of the circulatory apparatus of the young student who is ambitious to place his college colors at the head of a race. In young boys hypertrophy may follow the smoker's heart; indeed, the irregularity produced by tobacco may lead to more serious disease, even to organic murmurs and cardiac failure. The simple hypertrophy which may be caused by the strain of excessive exercise tends to fatty degeneration of the cardiac fibres when the habits become more sedentary, and may lead to weakness, which evil habits, excessive tobacco indulgence, or venereal excesses will eventually develop into 'dilatation, irregularity, and finally organic disease. Dilatation is the more apt to arise early in those cases where there is great internal pressure on the cardiac walls during diastole, or when the obstruction arises suddenly. Again, dilatation is only too apt to follow an exhausting illness. Dilatation and hypertrophy seem in some cases to more or less depend one upon the other, therefore the rapidity with which they become established depends much upon the cause. Occasionally in compensatory hypertrophy dilatation is salutary, and does not allow the hypertrophy to become excessive; on the other hand, in some instances the dilatation rapidly overcomes the hypertrophy and the case speedily terminates. The nervous energy that animates the heart is a direct aid in producing a certain degree of compensatory hypertrophy, and when it is enervated dilatation and loss of contractile power will rapidly follow.

Dilatation is only too apt to accompany acute or chronic disorders of the pulmonary tissues, the right heart being first affected, but eventually both sides will dilate; dilatation is produced somewhat suddenly in asphyxia from croup, diphtheria, capillary bronchitis, pneumonia, and pertussis. Gourraud also notes it in cases of disturbance in the blood-making apparatus, in which the heart and nervous system are supplied with poor and ill-nourishing blood.

Pitt* has noted that at puberty, in rapidly-growing children, dilatation of the heart is apt to arise unless great care is used to prevent undue circulatory strain at this time. He points out that, according to the observations of Beneke, the annual increase in the size of the heart between seven and fourteen years of age is only eight per cent., whilst during the development of puberty the increase varies between eighty and one hundred per cent.,—that is, the heart nearly or quite doubles in size during the development of puberty. When the changes of puberty are accomplished in one year the heart doubles in size during that year; when the changes are spread over two years the annual growth is fifty per cent.; when over five years, twenty-two per cent.; so that in each case the same change—that is, doubling of the size—takes place. The importance of these changes to the individual may be inferred from the fact that the heart may in this one year grow three times as much as it did in the preceding year, but when such a task is demanded of an organ, it is only in the minority that it can take place in one year without unfortunate results. Clinical experience appears to show that the great demands made at this time on the heart may lead to slight cardiac dilatation and to the lack of reserve cardiac energy to meet emergencies so common at this age, especially in those who have grown very rapidly. The symptoms of cardiac weakness are usually not met with in those in whom puberty has developed rapidly, but in children in whom it is retarded or is still incomplete. Pitt cites the case of a girl, aged sixteen, who had grown nearly three inches during the preceding year, and was the average height. She had noticed for some time previously that she easily became short of breath, and after playing tennis suffered from severe dyspnœa for the rest of the day, with a feeling of cardiac discomfort sometimes amounting to pain. More recently she had suffered from dyspnœa at night, occasionally so severe that she was unable to lie down; also from palpitation, languor, or partial syncope, and anæmia. Menstruation had occurred once six months previously, and was then only scanty. The cardiac impulse was found diffused over an area of an inch and a half, extending in the fifth interspace to the nipple-line. There was slight epigastric pulsation. The first sound at the apex was prolonged, the second over the pulmonary area accentuated, and the first over the aortic area weaker than normal.

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* British Medical Journal, November 27, 1886.

Physical signs and symptoms.—In the young hypertrophy will cause a yielding and bulging of the præcordia; this is very marked in young cases. Schrötter thinks that pericardial adhesions are always associated with this condition, but such does not seem to be the fact. Dilatation alone does not cause bulging. The apex-beat and the cardiac impulse is much changed; hypertrophy causes a downward displacement with a marked left lateral obliquity. We have frequently noted the apical impingement in the seventh interspace at the anterior axillary line; its beat was forcible, powerful, and well defined. Dilatation as it arises will increase the visible cardiac movements in a transverse direction, but will not cause them to become much, if any, lower; they will be diffuse, extensive, but ill-defined; sometimes they are undulatory, irregular in rhythm, or they may be even intermittent; occasionally under these circumstances the cardiac impulse can be seen but not felt,—a fact first recorded by Walshe,—at other times it is not perceptible at all, either to touch or sight. These alterations in the cardiac action depend much, of course, upon the relation of hypertrophy to dilatation; the particular part of the heart involved will have much to do with the seat and character of the impulse. Either dilatation or hypertrophy or both will cause marked and constant changes in the area of cardiac percussion-dulness. Osler records the case of a young man under his care for several years who was very emotional and hypochondriacal, and was addicted to excessive venery, whose left ventricle became strongly hypertrophied and beat without the nipple-line. We have already recorded cases in which the hypertrophy and dilatation were enormous.

Upon auscultation, when the valves are not diseased, hypertrophy will present a prolonged dull first sound; should dilatation exist the sound may be very clear and sharp; not infrequently do we note reduplication of the sounds. In other cases the *tintement métallique*, described by Bouillaud, may be heard; this sound is a peculiar clink, which must be heard to be appreciated: it is impossible to represent it in words or symbols. The second sound is most usually clear and loud or ringing.

When dilatation becomes excessive the first sound is short, sharp, and valvular, resembling very closely the second; later it becomes very weak; reduplication is now, perhaps, more likely to occur, and murmurs may arise from simple incompetency of the valves, produced by the great dilatation. The pulse in hypertrophy unassociated with valvular lesions is full, regular, strong, and of high tension; its rate is generally about normal, although it may be increased; as dilatation arises the pulse becomes irregular and intermittent; indeed, these constitute the earliest signs of cardiac failure. As the degeneration advances the pulse becomes quick, small, thready, and weak.

The *prognosis* depends much upon the cause and the relation of dilatation to the hypertrophy.

In the fevers and in anæmia temporary dilatation often arises, but passes away as the general health is restored; but when we are unable to reduce the dilatation we base our prognosis upon its degree. Most cases of dilated hypertrophy are accompanied or caused by valvular disease. If the compensation is maintained, but few or any symptoms are presented. However, should the compensation fail, and our measures for its re-establishment be futile, the case at once assumes a serious aspect. In hypertrophy unassociated with dilatation the prognosis also depends much upon its cause. For example, the hypertrophy of acute Bright's disease is very apt to disappear with the subsidence of the primary disease; but should it be associated with irremediable disease, as chronic valve-disease, the prognosis presents an entirely different outlook, as here the welfare of the individual depends largely upon the ability of the cardiac muscle to maintain a sufficient degree of hypertrophy to compensate for the valvular leak, or obstruction, as the case may be. Under these circumstances a careful consideration of the general and local nutrition of our case becomes important. Another important factor is the seat of the valve-disease, as mitral stenosis* and regurgitation have a fair prognosis in relation to longevity. Such is also the case in aortic stenosis. Cases of aortic insufficiency do not allow perfect filling of the coronary arteries. Hence they do not favor hypertrophy, consequently their chance of establishing a compensatory hypertrophy is poor at best.

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* Osler believes that mitral stenosis, like the regurgitant murmur at the same valve, may exist for many years without exciting symptoms of heart-disease.

A dangerous form of hypertrophy is that which is attendant upon general arterial degeneration, on account of its liability to produce rupture, as illustrated in the case we mentioned when considering aneurism.

TREATMENT: *hypertrophy.*—Here the treatment is, as a rule, to maintain an hypertrophy which shall just be sufficient, and no more, for the extra work which the heart has to do. As in organic disease, while we are unable to remove the root of the trouble, still we can by extreme care and the intelligent co-operation of our patient or their parents maintain that nice balance which, while the hypertrophy is sufficient, still it is not excessive; and, on the other hand, we are able to prevent the occurrence of dilatation, which, as we have already learned, is an untoward event for whose appearance we must be ever on the watch.

In hypertrophy the diet, exercise, and habits are to be carefully regulated. Those little patients who present arterial lesions also, together with renal disorder and high tension, must particularly be guarded against the danger of rupture of the vessels. Cardiac irregularity and unduly forcible contraction can often be met by rest and the administration in the latter instance of cardiac sedatives, as aconite or veratrum, and in the former by small "steadying" doses of digitalis.

As we have already stated, boys, as they grow older, must be made to understand the danger of over-exertion, the use or abuse of tobacco and alcohol, or of sexual excesses.

Dilatation.—The treatment of this condition has been somewhat elaborately alluded to when treating valvular heart-disease, as the treatment of dilatation is practically that which is applicable to chronic valve-disease.

As the symptoms arise, the work of the heart must at once be reduced by enjoining absolute rest, as, for instance, in the dilatation of puberty referred to by Pitt (ibid.) the child was ordered rest in the recumbent position, which, in connection with a regulated diet, arsenic, and iron, was sufficient to completely restore the heart to its normal condition.

Rest, in the majority of the cases of heart-failure in its early stages, is nothing more nor less than a specific, notwithstanding Oertel's* opinion that exercise, especially climbing, forms an important element in the treatment, as he considers that severe exercise stimulates the heart-muscle and favors the restoration of hypertrophy. Osler considers his suggestion of a reduction in the amount of liquids ingested as a happy method of reducing the volume of blood to be circulated by the heart.

Digitalis becomes a true heart-food in these cases; by its exhibition we render the irregular, wavy, feeble, and frequent contractions regular, slower, and stronger, at the same time the overloaded, embarrassed circulation is markedly relieved. The medicinal substitutes for digitalis were considered in the last chapter.

In the final asystolism which will eventually arise, our sheet-anchor—digitalis—seems to have lost its most desired action, and we will be obliged to resort to alcoholic stimulation, together with hypodermic medication of rapid diffusible stimulants, as ether, carbonate of ammonia, or brandy.

ATROPHY OF THE HEART.

Cardiac atrophy occurs either congenitally or as an acquired affection; this condition was formerly termed phthisis of the heart. The heart is most usually decreased both in size and weight; in many of the degenerations of the heart-muscle there is localized atrophy of the fibres.

Congenital atrophy is almost entirely confined to the female sex, and is associated with anomalies or defective development of the arteries and the sexual organs.

Virchow has called attention to this condition of cardiac and circulatory atrophy in cases of chlorosis. Gowers† mentions a case seen by Allen Burns, in which an adult presented a heart corresponding in size to that of a child of six or seven years.

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* Ziem. Handbuch der Allgemeine Therapie, Bd. iv.; Osler, American System of Med., p. 635.

† Osler, ibid.

Paul* describes an atrophic sclerotic myocarditis which he states may occur during intra-uterine life. Phthisis seems to cause a marked and persistent atrophy of the heart. Quain has shown that in 54.4 per cent. cases of phthisis the heart is below the normal size in regard to weight; typhoid fever, marasmus, and diseases of a subacute character may lead to wasting of the heart. Locally, pressure by pericardial adhesions, by mediastinal growths or deformities, and interference with the circulation in the coronary arteries may cause atrophy.

Post-mortem examination in simple atrophy presents a general diminution in size and weight; in local atrophy one or more of the cavities or portions of the walls of the heart may be found below the ordinary standard. The atrophied heart may be normal in color, or it may be very pale; it has been noted of a deep reddish-brown. The pericardium presents a somewhat peculiar appearance, which Laennec has aptly styled a "withered-apple" aspect; it is due to the fact that the pericardium, not shrinking with the heart, presents a puckered, opaque, and œdematous appearance; the coronary arteries become prominent and tortuous for the same reasons. An important fact to remember in making these post-mortem examinations is that the acquired variety of atrophy alone presents the appearances just described; they are never seen in the congenital forms.

Symptoms.—These are not at all diagnostic; they are simply those that of necessity arise from diminished power of the heart; the sounds are feeble, the pulse is weak, and anæmia or chlorosis is generally present.

Diagnosis.—Atrophy of the heart is rarely diagnosed during the patient's life.

The *treatment* consists in combating the primary disease which has caused the atrophy.

CARDIAC NEUROSES.

Functional disorders of the heart's action, irrespective of inflammation or structural lesion of any kind whatever, constitute a frequent and an important class of cardiac diseases in the growing child; they are usually paroxysmal in their manifestation, and may or may not be accompanied by pain.

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* Ibid.

Palpitation.—A violent or tumultuous action of the heart is a personal experience through which most of us have passed, excited by some intense mental emotion; we, however, have observed persons in whom the cardiac equilibrium could not be disarranged no matter what the provocation, either mental or physical. In these cases it has seemed to us that the heart possessed a peculiar organization, which maintained its rhythm under all and every condition; the pneumogastrics and the sympathetic ganglia in these individuals appear to be perfectly phlegmatic or callous, if we may so apply the term. Some children are undoubtedly endowed with pneumogastric and sympathetic nerves that are slow to carry impulses to the circulatory apparatus, while others have neurotic fibres which are always alert and active, responding but too readily to the slightest irritation. Da Costa has most happily expressed these thoughts in a terse manner by the term "irritable heart," which is peculiarly apt. This condition is met with under many diverse circumstances and conditions, and presents all degrees of severity, from the mildest disorder, often described by the patient as a "fluttering," to a most severe functional disorder accompanied by a fear of impending death.

Irritable heart in the young is generally a concomitant of neurasthenia, over-exertion, sexual excesses, and the abuse of certain articles, as tobacco, tea, coffee, or alcohol,—the so-called toxic cases. It is also seen in some anæmic and leukæmic cases and in malarial poisoning. The immediate cause is, of course, an undue excitability of the muscular wall of the heart, in all probability brought about by derangements in the cardiac ganglia, the vagus, and in the filaments of the ganglia of the great sympathetic, which are distributed to the heart. This condition is what is described by the parents as a nervous and excitable temperament in their child; Thomas Shapter considers early age a direct predisposing factor to this condition.

The irritable heart from over-exertion is met with in young lads who are gymnasts, runners, jumpers, etc.; the disorder is here sometimes styled heart-shock when due to a single great and continued effort; in all probability, as Osler* states, there has been an acute dilatation caused by the sudden strain, and the heart possibly never returns to its normal condition. The other form induced by continued over-exertion is the condition to which Da Costa first called attention as met with in young soldiers during the war of the Rebellion, and now frequently seen in civil life in young persons exposed to occupations requiring strength beyond their years; some authorities have styled this form of palpitation as idiopathic dilated hypertrophy; Osler is of the opinion that syphilis may enter into its causation.

A fruitful source of palpitation or irritable heart in young boys is masturbation, or in older individuals excessive coitus; in many instances in which we have been consulted the cardiac symptoms speedily disappear, without other active treatment, when the youth was shown the moral and physical dangers of his habits.

Tobacco must often be considered when seeking the etiology of cases that desire our opinion.

James G., aged sixteen, presented himself at our service in the University Hospital; the boy worked in a cigar-manufactory,† and stated that he habitually smoked eight to ten strong cigars a day, and desired our advice in regard to the condition of his heart. Examination showed a somewhat pale, anæmic boy, with an anxious expression, some dyspnœa, which he stated was greatly increased by exercise, marked palpitation, considerable cardiac distress or pain. The heart was acting at the rate of one hundred and eighty beats per minute, was very irregular, sometimes intermittent, but did not present any evidences of increase in size either by dilatation or hypertrophy, —usually these cases present some slight enlargement. The patient was unable to assume the recumbent position but for a few minutes, was totally unable to lie upon the left side, for as soon as he assumed a left lateral decubitus a severe attack of angina would arise. This pain in many cases is very characteristic of the toxic action of tobacco upon the heart; we have notes of many cases in the young in which it was always present.

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* Toronto Med. Soc., April 14, 1887.

† The examination of one thousand workers in tobacco compared with a series of control experiments on animals resulted in finding among the workers dilatation of the pupils, cardiac neurosis, exaggerated tendon and vaso-motor reflexes, trembling hands, dyspnœa. Headache, gastralgia, and nervous cough were also present. The respiratory organs were most frequently attacked after the nervous system. The same symptoms were produced by injecting one-fortieth to one-tenth drop of nicotine in rabbits, one-twentieth to one-third in dogs, and keeping them also in a tobacco-impregnated atmosphere. (Bull. Gén. de Thérap., July 15, 1887; Med. News, Oct. 8, 1887.)

The pulse in irritable heart may be extremely irregular, varying from 75 or 80 to 150 or 200, depending much upon the patient's environment either before or during our examination; position will exert a decided influence upon the rate, usually slower when the patient is recumbent.

A peculiar flushing or lividity of the cutaneous surface, due to vaso-motor change or innervation, is sometimes noted.

Graves's disease and tachycardia, with pulsation at the rate of 180 to 200, are considered by Osler as forms of irritable heart.

Treatment.—The removal of the cause is absolutely necessary to attain success; this, with perfect rest, preferably in the recumbent position, will often suffice to obtain a cure. In treating chronic tobacco-poisoning, in addition to the essential point of total abstinence, which, unfortunately, often cannot be obtained, Favarger* aptly advises that smoking be never indulged in on an empty stomach. Inasmuch as nicotine has been found in the perspiration and urine, he considers it not unreasonable that means to promote its elimination be used in treatment, such as packs, diuretics, and diaphoretics. Galvanism has been used by some authorities in cases of tobacco-heart with marked benefit; we have in a recent case obtained happy results from trinitrin, one one-hundredth-grain doses, increasing to full physiological tolerance, together with a regulated diet and absolute rest.

Palpitation, independent of the toxic causes, may often be relieved by bromide of potassium, or, in weak individuals, the bromide of sodium; strychnia is peculiarly efficacious in many instances; ammonia in other patients produces speedy relief; arsenic and cod-liver oil will often fulfil special indications. It has been our practice for some time to cover the præcordia with a freshly-made belladonna-plaster.

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* Therap. Gaz., Oct. 15, 1887, p. 689.

The digestion must receive especial care. We have all met with cases in which starchy or saccharine foods in stomachs unable to digest them have caused distressing and alarming symptoms by over-distending the stomach, thus affecting the heart both by a direct mechanical obstruction and by a reflex irritation. In those cases of cardiac irritability which are gastric in origin, small doses of carbolic acid and soda will often prove of inestimable benefit. Patients of a gouty or rheumatic diathesis are particularly liable to have irritable or irregular cardiac action, which will be markedly increased by errors in diet, especially the exhibition of alcohol.

Prompt relief must often be obtained for the more severe forms of palpitation; we generally select for this purpose the antispasmodics, opium, ether, or well-diluted alcohol, or Hoffmann's anodyne. The German writers recommend the application of ice to the præcordia, which may be accomplished either by an ice-bag or by means of Littre's tubes. Flint has arrested a paroxysm by mechanical means, as pressure upon the abdomen, holding the breath after a deep inspiration, and compression of the vagus and sympathetic nerves in the neck.

Clemens* agrees with Stokes and Oertel in recommending enforced exercise for the so-called nervous palpitation.

Infrequency of the heart's action.—Cases of diminished frequency are recorded in which the individual presented a normal pulse-rate of 60, 40, and, under certain conditions, as low as 32 per minute; these are congenital peculiarities of the circulation. With the acquired variety in later life, a not infrequent condition, we have in this treatise nothing to do. Children with infrequent heart's action are apt to present some form of cerebral disturbance; these may be of the nature of epileptiform seizures or great mental excitability.

Flint calls attention to a curious form of functional disorder which would lead to the error of inferring infrequency of the heart's action from the pulse alone. This condition is characterized by the regular alternation of a ventricular systole, giving rise to a radial pulse, with one too feeble to be appreciated at the wrist. For example, Flint assumes the number of the ventricular systoles to be 70 per minute; in such a case the radial pulse would be 35 per minute. He has met with several cases of this disorder; the carotid pulse, however, accurately represents the heart's systole,—so that with auscultation we would note four sounds to each radial pulse. In this wise we may fall into the mistake of considering the case as one of reduplication of both the first and second sound. We have not as yet met such a case in young children, but have noted them in patients of eighteen years or over.

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* All. Med. Central Zeitung, Sept. 10, 1887.

REDUPLICATION OR DOUBLING OF THE HEART-SOUNDS.

Reduplication of the first or ventricular sound may be heard in a perfectly healthy individual; it is, however, under these circumstances not constant, heard to-day and inaudible to-morrow.

It is also noticed in connection with heart-disease, though here, again, it may not be constant. Doubling of the second sound—arterial sound—is met with as the next most frequent abnormality of this kind.

Various explanations have been advanced in explanation of reduplicated sounds; some considering, as Da Costa does, that they are caused by an arrest of synchronous action in the right and left hearts; others that it originates in non-synchronous tension of the individual segments of the auriculo-ventricular valves.

That the former explanation in some cases is the correct one we are able to testify from clinical observation, as in a few instances in children, with their thoracic walls, we have been enabled to note a double impulse accompanying each systole. Bamberger, Leyden, and Skoda give similar testimony; also endorsed by Malbrane, Gerhardt, Freidrich, Rosenstein, and Roy. One of our cases was far advanced in the sequential lesions of mitral insufficiency. It is interesting to note the fact that with the abnormal beat there is no pulsation in the arteries. Paul endeavors to explain the non-simultaneous action of the ventricles by stating that when the mitral valve is markedly incompetent, the overfilled right ventricle is unable to empty itself completely during the systole, and the next instant, during the diastole, is again distended with blood, and so excited to renewed contraction; on the other hand, he states that the left ventricle takes no part in this second or abnormal contraction of the right heart,—that is, at least none that is appreciable to our hearing or our sense of touch.

Stearn,* however, takes exception to the statement that both ventricles act simultaneously with the first of the double sounds, while the right acts alone with the second; he states that neither anatomical structure nor nervous supply will allow such a theory to be accepted, citing against it also the fact that there is no hemi-systole in the dying heart.

Further, in one of his cases there was a pulsation with each of the systolic sounds in the carotid artery, although there was none in the radial, and he is therefore obliged to conclude with Bozzolo that there are two complete systoles, one following the other very rapidly, as the cause of the phenomena. He explains the absence of the radial pulsation with the second beat by the fact that systole recurs so rapidly that there is no time for the left ventricle to refill, this being the more difficult as there was in his two cases—which he believes to be always present in such—tricuspid regurgitation; this would still further diminish the quantity of blood going to the left side, while the systemic veins and right auricle would be surcharged and ready to pour their contents into the right ventricle. A further point militating against the statement that reduplication of the first sound is due to a want of simultaneous contraction of the ventricles, is the fact that the second arterial sound is not also doubled, for if the ventricles do not act together, the diastolic closure of the semilunar valves —aortic and pulmonary—should also be non-synchronous.

A rare form of reduplication is that in which the first sound is split into three parts, the *trommelschlag*, or drum-beat, of the Germans.

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* Deutsches Arch. für Klinische Med., October 15, 1884; also Edinburgh Medical Journal, December, 1884.

Potain has reported in cases of cardiac hypertrophy dependent upon "granular atrophy of the kidneys" a variety of reduplication of the first sound which he has designated *bruit de galop*, in which besides the normal sounds an additional sound preceding the first was noted; this was considered to be due to contraction of the hypertrophied auricles.*

As we have already stated, reduplication of the first sound may occur entirely independent of any appreciable disease, so also may we meet *reduplication of the second sound;* most usually, however, it is an evidence of some cardiac disorder. Its cause seems to be alone want of synchronous closure of the aortic and pulmonary valves, consequently the two sounds do not correspond with each other. It seems possible to us, however, that the tension of the leaflets might occur in two separate and distinct movements, and thus occasion division of the second sound. We have met cases in which the division occurred over but one of the arterial orifices, most usually the aortic, which we are totally unable to explain except upon this hypothesis. We have the notes of two cases in which reduplication of the second sound was associated with organic mitral disease; we have also been enabled to verify its association with adherent pericardium, a condition that is met with even in the very young, as Behier† noted an infant of eleven months with an adherent pericardium, the result of chronic pericarditis.

ANGINA PECTORIS.

This name, like many others in medicine, was first used to designate a group of symptoms, but has now crept into our nomenclature as the title of a disease.

Angina pectoris may be considered a paroxysmal neuralgia, having its maximum intensity in or about the præcordia, from there extending upwards to the left shoulder and down the arm to the tips of the fingers. This, however, is not the invariable course of the pain: a young girl under our care suffers most intensely in the right shoulder and arm, and other cases have been recorded in which the pain extended down the legs.

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* Those who desire to pursue this subject further are referred to a recent article by Cuffer and Barbillion, in the Gaz. des Hôp., No. 36, March 24, 1887, p. 284.

† J. M. Da Costa, Amer. System Med., vol. iii. p. 786; from Constantin Paul, Mal. des Cœur, Paris, 1883.

These paroxysmal attacks are almost always accompanied by a fear of impending death,—a fear which we are able to testify is sometimes most unfortunately realized in those cases who present an angina as secondary to organic disease of the heart or larger vessels; in its severe form it is perhaps the most excruciating pain that we will be called upon to allay; associated with this intense suffering is the sensation that death is about to take place; a choking sensation, together with restrained respiration, and disturbed circulation all add to the patient's distress.

Sometimes we have noted decreased action of the pulse at other times in the same patient, or in different patients we have noted marked increase in the pulse-rate; the heart's action is also irregular and occasionally intermittent; arterial tension is generally increased at first, but diminished later in the attack; the face is most frequently pallid. One of our cases, however, had great lividity of the face throughout the attack; the expression is one of extreme anxiety, afterwards becoming haggard or depressed. The cutaneous surfaces are cold and usually bedewed with perspiration; the condition of the circulation will depend much upon the degree and character of the coexisting organic heart-disease, if it is present, together with the functional disturbance excited by the paroxysm. Angina pectoris is proven to be associated with fatty heart; also, as Flint tells us, with obstruction of the coronary arteries. The paroxysms are apt to arise suddenly and disappear in a similar manner, to be followed by a discharge of pale watery urine; their duration is but a few moments, although they may be protracted into minutes; their severity may be most intense, or, on the other hand, they may be extremely slight, with but a momentary heart-pang and but transient disturbance of the circulation, the entire paroxysm being but a passing annoyance.

The *exciting cause* in some individuals is very slight; one of our cases would be awakened by the first twinge of pain, another was unable to face a strong wind, in still another it was caused by swallowing a large bolus of food. As the cases progress the attacks appear to arise without any exciting cause; the intervals between the attacks may be long or short, some cases not having more than one a year, others one every month or so.

There is little difficulty in making the *diagnosis* if the case is at all carefully observed. Mistakes have arisen in the differential diagnosis between this disease and gastralgia or intercostal neuralgia.

Many attempts have been made to explain the pathology of this affection. We agree with Flint that most cases are due to ischæmia of the heart: the nerves concerned in the excruciating pain are probably the sensory fibres of the pneumogastrics. Their connection with the brachial plexus causes the pain to radiate down the arm. Flint, in endeavoring to explain the occurrence of pain in parts which have no direct connection with the cardiac nerves, states that a centripetal influence conveyed to the nervous centres may occasion pain referable to different situations.

When angina pectoris arises as a purely functional cardiac neurosis unassociated with organic disease, the pathology and indeed the etiology are difficult of interpretation; fortunately, however, these cases are rare. Some authorities have considered tobacco, gout, hysteria, and exposure to cold as etiological factors.

Age.—We have never met a case of angina pectoris in a patient under seventeen years; most cases occur after middle life, and principally in men.

Prognosis.—A patient the subject of this disease must be considered as subject to sudden death during any paroxysm; the fact that previous paroxysms have been mild is no assurance that a severe and fatal attack may not arise at any time; on the other hand, the attacks may recur for years and the patient ultimately succumb to another disease. A single paroxysm may alone occur, with possibly a return after many years, or perhaps without recurrence at all.

A most important factor in the prognosis is the existence of organic heart-disease; recovery is, of course, out of the question under these circumstances. Indeed, the danger of sudden death from asystolism must always be considered, especially should the aortic valves be incompetent or the cardiac muscle fatty; on the other hand, if there is no organic disease and the heart and circulation are not materially disarranged during a paroxysm, the prognosis in relation to life is fairly good; indeed, the prospects of cure may be here favorably entertained.

Treatment.—The treatment is to be divided into that which is appropriate to the attack and the measures which are to be adopted during the intervals with a view to preventing a recurrence.

During the paroxysm we must not alone combat the intense pain, but we must also direct our attention to the ever-present danger of speedy dissolution from asystolism. These indications are best met by the administration of morphia, together with a quick diffusible stimulant, as ether, Hoffmann's anodyne, or alcohol in small doses, frequently repeated; but, unfortunately, we are not apt to be present during an attack, so that it is well to instruct our patients in the management of their own cases; nitrite of amyl inhaled at the outset will in some cases produce the most happy results; counter-irritation of the præcordia will, in a certain number of cases, prove beneficial.

During the interval we must caution our patients to avoid all known exciting causes of a paroxysm; exercise or work, either mental or physical, is never to be carried to the point of fatigue. The young are to be particularly cautioned in regard to sexual intercourse and the use of tobacco, tea, or coffee.

The diet is to be carefully regulated, and so balanced that while nutrition shall not suffer there will still be no excess to tax the digestive powers and reflexly irritate the heart or cardiac ganglia. Certain constitutional dyscrasiæ are, if possible, to be corrected, notably the gouty and rheumatic. An anæmic condition appears to be both an exciting and predisposing cause, which is to be removed if at all possible.

Many drugs have been advanced as specifics in this disease, but, unfortunately, like most specifics, they have been of value but in the hands of a few observers. Nux vomica is worthy of trial, and in some cases digitalis or trinitrin may prove efficacious. Beard and Rockwell suggest the use of electricity.

EXOPHTHALMIC GOÎTRE.

Exophthalmic goître, *Graves's* disease or *Basedow's* disease, the *maladie de Graves, goître exophthalmique* of the French, and the *glotzangenkropf, Basedow'sche krankheit* of the Germans, is an enlargement of the thyroid body, accompanied by protrusion of the eyeballs, palpitation or increased cardiac action, dyspnœa, and anæmia.

We have met several cases of this disease in young girls, developing at or about the first menstruation, or following a severe mental strain or exhaustion at this time. All of our cases were anæmic and presented some premonitory symptoms before the disease was fully established,—the circulation was disturbed and the heart very irritable, later the face would flush and a sensation of fulness in the eyes and throat would be complained of; as the disease became fully developed, the heart became irregular and tumultuous in its action, the eyes would protrude, and the thyroid gland became prominent.

The cases presented no marked disturbance of vision, but there was a want of synchronism between the motion of the lids and that of the eyeballs; later the lids are usually unable to cover the balls, even during sleep. During the menstrual flow all the symptoms are increased, particularly the sensation of over-distention in the neck and eyes.

The thyroid gland is not always equally enlarged, and it may increase or decrease in size; it pulsates synchronously with the heart's beat, and in its earlier development has been mistaken for aneurism. The heart usually presents the earliest signs of commencing disturbance in cases of exophthalmic goitre; generally it is the first symptom noted by the patient. Its action becomes irregular, tumultuous, and rapid, in the young producing a prominence of the præcordia. The sounds are altered, becoming loud and accentuated; not infrequently a soft cooing murmur is audible at the base of the heart and in the larger arteries; the entire circulation seems to be unduly stimulated. We have noted pulsation in the small arteries.

Constitutionally the patients are generally in an anæmic, debilitated condition, with poor appetite and faulty digestion; occasional attacks of diarrhœa may arise. The temperature is apt to be slightly elevated, although this is by no means a constant symptom.

The increased size of the thyroid is apt to produce some difficulty in breathing, and may cause an alteration in the voice, or indeed complete aphonia.

Prognosis.—Exophthalmic goitre pursues a somewhat variable course; it usually increases from several months to years, then reaches a stationary period, from which it may either decline, with re-establishment of normal menstrual function and subsidence of cardiac and ophthalmic symptoms, or, on the other hand, the disease may progress and death occur from organic heart-disease, asthenia, or by intercurrent disease.

Some cases present alarming symptoms due to pressure on the trachea.

There are cases on record in which the protrusion of the eyeball was absent throughout the case; all the other symptoms, however, were present in a characteristic manner.

Pathology.—The enlargement of the thyroid gland is due to dilatation of its vessels, secondary to the persistent increased cardiac action, which is probably due to a stimulation of the accelerator nerves of the heart, the root of the trouble being probably situated in the sympathetic and vaso-motor nerves. An increased amount of connective tissue and a diminution of the ganglionic cells has been noted in the lower cervical sympathetic ganglia.

Lauder Brunton considers that "the protrusion of the eyeballs is due either to dilatation of the vessels in the orbit or to contraction of the involuntary muscular fibres in the orbital membrane which cover the spheno-maxillary fissure, or possibly to both causes combined." *Sex* and *age* are decided predisposing factors. Most of our cases were in females, and none were younger than twelve years; we have never seen the disease in a girl before puberty nor in a male under twenty years of age.

Treatment.—Pathologists not having as yet arrived at a consensus of opinion regarding the cause or the lesions present, our treatment must be somewhat palliative and expectant; a radical curative agent is not yet in our possession. We must content ourselves for the most part in securing a healthful abode, an occupation or mode of living that will not cause emotional disturbance or mental and physical fatigue, and an adequate diet with the avoidance of all dietetic errors or excesses. The use or abuse of alcohol or tobacco must be especially explained to the patient; it is also well to regulate the sexual indulgence.

Iron, in many cases, will prove very beneficial by correcting the attendant anæmia; digitalis should be tried to correct the accelerated cardiac action. Quinine, digitalis, and belladonna in combination often produce marked benefit.

Tri-weekly applications of a mild galvanic current to the neck and the thyroid tumor should be tried; indeed, in our own practice this has been most satisfactory.

Some writers recommend aconite and cardiac sedatives, or the application of an ice-bag to the præcordia. Care should be taken that the eyes do not become affected from the inability of the lids to close and protect them. Deep corneal ulcers sometimes result.

(To be concluded.)

ABSTRACT OF A PAPER ON INTUBATION OF THE LARYNX.

Read at the Ninth International Medical Congress

BY F. E. WAXHAM, M.D.,
Chicago.

THE author, while strongly advocating intubation, would not overlook the disadvantages and dangers of the operation. Among the most important mentioned were:

1st. The difficulty of performing it. There are comparatively few who possess the manual dexterity necessary for performing the operation quickly and well. Those who are not naturally dexterous, or who are not intimately acquainted with the anatomy of the parts, must practise faithfully on the cadaver, which is not always convenient or possible.

2d. The danger of injuring the soft tissues or of perforating the trachea from the lack of skill in performing the operation.

3d. The difficulty of extracting the tube, especially where the head rests low down in the larynx.

4th. The danger of peeling up of membrane below the tube, thus occluding it.

5th. The danger of pushing membrane down ahead of the tube upon its introduction.

6th. The difficulty of swallowing.

These dangers were not so serious but that they could be overcome. The 1st, 2d, and 3d, by repeated trials upon the cadaver, and by accepting every opportunity of making a digital examination of the larynx of the healthy child. The 4th and 5th difficulties will be obviated by the immediate removal of the tube, when, if the membrane is not rejected, the trachea-forceps, devised for that purpose, may be introduced and the membrane removed, or tracheotomy performed.

The 6th danger will be overcome by exercising the greatest judgment in the selection of the tube and in the feeding of the patient. If too large a tube is used it will ride high in the larynx, and will cause so much irritation from the pressure that the patient will swallow with great difficulty. Always select too small a tube rather than too large a one. By giving cracked ice, ice-cream, and semi-solids all together the difficulty will be greatly lessened. The employment of a tube with artificial epiglottis is also of great assistance in swallowing.

The advantages over tracheotomy were then referred to.

1st. It can be performed by the expert quickly, almost instantly.

2d. There is no loss of blood to further prostrate the patient.

3d. There is no injury to the soft tissues, and little or no pain.

4th. There is no shock from the operation.

5th. There is no danger from septicæmia or from erysipelas as from an open wound.

6th. There is very little irritation from the tube, much less than from a tracheotomy tube.

7th. There is no open wound to close by slow granulation.

8th. The air enters the lungs through the natural passages.

9th. Recovery is rapid after the removal of the tube.

10th. We can do with less skilled attention than after tracheotomy.

11th. Consent of parents is much more easily obtained.

12th. We can save as large a proportion of cases as by tracheotomy at all ages, and a much larger proportion among children less than three years of age.

In proof of the latter assertion the author reported 1007 cases with 266 recoveries, or 26.54 per cent.

In 661 cases the ages were recorded, and were as follows:

Patients.	Age.	Recoveries.	Per Cent.
31	under 1 year.	5	16.12
97	" 1 "	15	15.46
149	" 2 years.	29	19.46
140	" 3 "	42	30.00
98	" 4 "	32	32.65
56	" 5 "	19	33.92
27	" 6 "	10	37.03
32	" 7 "	16	50.00
12	" 8 "	5	41.66
10	" 9 "	5	50.00
2	" 10 "	1	50.00
5	" 11 "	2	40.00
2	" 14 "	0	00.00
Total 661		181	27.38

Average age, three years and three months.

There were 277 patients under three years, with 49 recoveries, or 17.68 per cent.

There were 384 patients over three years, with 132 recoveries, or 34.37 per cent.*

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* Since making the above report the writer has had eight cases, all diphtheritic, with four recoveries. The ages of those recovering were six years, four years, twenty-two months, and nine years respectively.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Riess: The Treatment of Chorea and other Hyperkinetic Diseases with Physostigmin. (*Centralb. f. K.*, July 9, 1887.)

Starting from the postulate that as physostigmin has a paralyzing action upon the central nervous system it should have a favorable action upon persons suffering with chorea, the author has used the sulphate of that alkaloid in thirty-four cases since 1879. In four of the cases the disease was of a severe and fatal type, and no benefit was experienced from treatment. In four cases of habitual chorea in young adults the improvement was only temporary and of moderate degree. In the remaining twenty-six cases the cure was complete after a period of treatment averaging fifteen days, with two exceptions, in which the treatment lasted several weeks. The salt was used subcutaneously in half-milligramme doses for the younger, milligramme doses for the older children. After a few days of treatment, two doses daily were given to the older ones. During the first few days of treatment vomiting was a customary occurrence an hour or an hour and a half after the injection was made, also increased activity of the muscles. Rarely was there any noticeable effect upon the pupils. Physostigmin has also been used by the author with good success in tetanus tremor, paralysis agitans, multiple sclerosis of the brain and spinal cord, post-hemiplegic chorea, and for the convulsions suggestive of athetosis. A. F. C.

Carmichael: Treatment of Bronchial Catarrh in Children. (*Jour. de Méd.*, July 31, 1887.)

According to this author hygienic means are of the first importance in respect to treatment. The clothes should be light in weight and loosely fitting; the child should lie upon the sound side, and should not continue too long in one position. From time to time the attendant should place her hands, moistened with water, upon the child's back and chest, to excite vigorous inspiration. The sick-room should be well ventilated and not too warm. The food should be light in character, and given at frequent intervals. Tonics should be used, a few drops of wine or brandy given occasionally, also small quantities of koumyss and subcarbonate of ammonia. Should spasmodic atelectasia occur, belladonna should be given in large and frequently-repeated doses. In acute bronchial catarrh the air of the chamber may be kept saturated with moisture by means of wet cloths hung near the crib. The chest should be wrapped with moist cotton, upon which the essence of eucalyptus or turpentine may be sprinkled, the cotton being covered with a mackintosh. If the cough is dry and continuous, the author objects to the use of ipecac. To children who are rather robust when the attack begins, antimony, apomorphine, or ipecac may be given, with or without alkalies. The bronchial irritation may be diminished by the use of small doses of turpentine. A. F. C.

Solger: Salicylate of Bismuth in Chronic Diarrhœa. (*Arch. f. Kinderh.* [abstracted], Bd. viii. H. 5.)

The salt was used by the author, in the powdered form, usually in eighty-centigramme doses, three times daily, both on an empty and a full stomach, in cases of chronic diarrhœa and intestinal catarrh which had resisted all other methods of treatment, with good success. The best results were obtained from the salt made by Gehe, of Dresden, other preparations being less active. The efficiency of the drug seems to depend upon its disinfecting action upon the contents of the intestines, and it probably destroys the vitality of the bacteria and micrococci in the intestinal canal. Gutmann has shown that the greater activity of Gehe's salicylate of bismuth depends upon the chemical combination of its elements (*i.e.*, it is not a merely mechanical mixture, as are some other preparations), and upon the very large proportion of bismuth which it contains. In all the salts of bismuth which are in use, it is probably the bismuth alone which is the active agent. For certain fermentative processes in the stomach this salt has also been found very serviceable. A. F. C.

Jacubowitsch: The Influence of Antipyrine upon Temperature and Tissue-Changes in Children. (*Arch. di Patol. Inf.* [abstracted], July, 1887.)

1. Antipyrine lowers temperature in children who are well and those who are sick, but to a greater degree in the latter.
2. The degree of lowering does not depend constantly upon the quantity taken.
3. Some children show an idiosyncrasy in the effect of this drug upon them. Even large doses sometimes have no perceptible effect.
4. Under the action of the largest doses the temperature will not remain influenced more than twenty-four hours.

5. The greatest depression (of temperature) is observed at midnight. After that time there is a gradual rise.

6. In well children antipyrine does not produce so great a depression of temperature as in the sick.

7. Very young children can tolerate large doses for one or two days. It rarely causes vomiting; collapse nor convulsions have been observed; sweating does not necessarily occur.

8. This alkaloid causes an increase in the electro-muscular excitability in children. This was shown by Devenne in experiments upon frogs and dogs. This investigator found that the increased electro-muscular excitability was due to irritation of the motor centres.

9. In a small number of cases the daily excretion of urine is increased in quantity and the specific gravity diminished; in others the specific gravity is increased, the urine becoming syrupy in consistency and obstructed in its elimination.

10. In forty-eight hours after taking the last dose of a series, the daily quantity of all the elements which constitute the urine will exceed that of all contained in the urine passed the day before the administration of the alkaloid was commenced.

11. By the use of the chloride of iron and the iodide of potassium, antipyrine may be recovered from the urine within forty-eight hours after the last dose was taken. A. F. C.

The Treatment of Chronic and Rebellious Eczema of the Vulva in Little Girls. (*Jour. de Méd.*, June 26, 1887.)

1. The parts should be sprayed three times daily with a two-per-cent. solution of carbolic acid.

2. Once a week the diseased surfaces should be lightly touched with a pencil dipped in ordinary acetic acid.

3. If there are deep ulcerations, they should be dusted with a powder composed of one part of iodoform to two of alum.

A. F. C.

Ferreira: The Use of Alcohol in the Treatment of Children's Diseases. (*Rev. Mens. des Mal. de L'Enf.*, August, 1887.)

The similarity of the pathology and therapeutics of infancy and old age has frequently been remarked. Since the investigations of Todd and other English physicians, the value of alcohol in the treatment of pneumonia and other diseases of the respiratory apparatus has been generally recognized. Chomel, Béhier, Peter, and others have also shown that it is only indicated for feeble and cachectic subjects, or in cases in which there are phenomena of adynamia or collapse. While the indications for its use in adults have been clearly defined for some time, it is only recently that its use in the treatment of disease in children has been advocated, for it was commonly supposed that children tolerated spirituous liquors badly. A large number of physicians are still sceptical of their value unless it be in exceptional cases. Henoch, Barthez, and Sanné speak with positiveness of the good results which are experienced from the use of alcohol by children suffering from pneumonia, broncho-pneumonia, tuberculosis, and a great number of affections of the digestive apparatus; in fact, in all cases in which there are evidences of adynamia. West, Meigs and Pepper, and Simon have also testified to the value of this means of treatment. The author's experience has abundantly proved the usefulness of alcohol in the diseases of children, if it is of good quality and is given in small doses. It is here considered with reference to its usefulness in diseases of the respiratory apparatus, the digestive apparatus, and in certain forms of pyrexia. For the respiratory apparatus it may be used in acute and chronic diseases, the former including capillary bronchitis, and broncho-pneumonia, either primary or secondary to whooping-cough or measles. The adynamia which may result so quickly from these diseases is the condition which the alcohol is to combat. Expectorants are useless or even harmful at such a time, while the effect of such alcoholic preparations as curaçoa, chartreuse, or cognac is rapid and positively helpful. In the case of nursing infants, the effect is sometimes astonishing. In lobar pneumonia the author has also had gratifying results in the few cases in which he has used it. In acute bronchitis of the larger and medium-sized tubes the author has used alcohol effectively as an adjuvant, especially among the weak, indolent, and lymphatic children without robustness of constitution or temperament. In the tuberculosis of childhood excellent results are also obtained by the use of alcohol. In the chronic broncho-pulmonary affections, especially in chronic pulmonary catarrh and chronic bronchitis, which is often a prelude to tuberculosis, periods of treatment are advised with wine of quinquina or wine of mono-calcic phosphate, either alone or combined with a solution of tar. Excellent results may also be expected from this means of treatment in chronic phthisis, which sometimes attacks very young children, and not infrequently children as young as eight years of age, also in asthma and emphysema. In the diseases of the digestive apparatus it may be given in acute indigestion in the form of liqueurs, to which may be added suitable quantities of bicarbonate of soda or creasote. If the acute dyspepsia is accompanied by congestion of the liver alcohol is quite contraindicated, for it would tend only to increase the hepatic engorgement and exaggerate the biliary secretion. In choleriform diarrhœa and infantile cholera alcohol will quickly control the adynamia, the phenomena of collapse giving place to normal conditions. In acute and chronic entero-colitis it should be well diluted with water, and not given for too long a period. In typhoid fever the value of this agent is generally recognized. In the febrile conditions associated with malaria, in typho-malarial and rebellious remittent or intermittent fevers, the author's experience with liqueurs, either with or without Vichy water, has been very gratifying, especially in those cases in which quinine could not be taken. In the treatment of the paludal cachexia and in anæmia in general, a useful preparation has been found to be the wine of quinquina. In rachitis and scrofula, and in all conditions characterized by depression of the vital forces or a lowering of the coefficient of nutrition, alcohol is entirely indicated. The treatment with this agent should be discontinued from time to time, or digestive disorders indicative of gastric catarrh may be excited, as well as certain hepatic disturbances arising from congestion of the liver. A. F. C.

Pomeroy: A Case of Well-nigh Fatal Hemorrhage from the Conjunctivæ. (*Med. Rec.*, August 20, 1887.)

As a prophylactic measure two drops of a two-per-cent. solution of nitrate of silver were placed upon the slightly-separated eyelids of a day-old infant; this was at once neutralized with a solution of salt and water. In about seven hours a serous discharge from the eyes was noticed, which, after some hours, became almost wholly sanguinolent. Various measures were resorted to to check the hemorrhage, with but temporary success. The bleeding was finally controlled by firm pressure for over thirty-six hours. There was no hæmaphyllic history in the family.

Are Starch-Containing Foods Dangerous to Young Infants? (Editorial, *Gaillard's Med. Jour.*, September, 1887.)

At a recent meeting of the Clinical Society of London, Mr. R. W. Parker, surgeon to the East London Hospital for Children, read a paper on the alleged dangers of starch-containing foods during the period of infancy, in which he took a different view of the subject from that now entertained by the best authorities on pediatrics. After many years' work in a children's hospital, he has arrived at the conclusion that the dangers of this kind of food are very greatly exaggerated, and he does not hesitate to say that he has never himself met with cases in which he could distinctly and directly trace disorder to starchy foods. His object in making these statements is not to advocate artificial feeding in preference to nursing, but to draw attention to what he believes to be the real and proximate causes of the immense mortality which obtains among young children, especially among the children of the poorer classes,—namely, congenital debility.

"It cannot be gainsaid," he says, "that very many artificially-fed children are puny and weakly, and it has come to be generally accepted that the children are puny and weakly because they are so fed. On the other hand, an analysis of any one hundred wasted and weakly children will show that a considerable number of them are breast-fed; and further, that of those which are being artificially fed many were puny and weakly when artificial feeding was commenced, and that artificial food was either added to the nursing or substituted for it because the children were not thriving. What inferences, then, are to be drawn from these facts? First, and chiefly, that many children are congenitally deficient in the vitality and digestive power which are absolutely essential to their healthy development. Such children will be weak and puny on any diet. Such children as these, moreover, are just the kind of children we should expect to be born of women (of parents) themselves weakly, either congenitally or from acquired causes, such as irregular modes of living, drink, poverty, —leading, as it does, to privation of every kind: food, fresh air, light, rest, etc. Can women exposed to such conditions as these be expected to give birth to strong, healthy children, or even to produce good milk in sufficient quantity to nourish their children properly?"

Towards deciding the issue raised he gives an analysis of one hundred histories of artificially-fed children under twelve months of age, taken from among his unselected patients attending the East London Hospital for Children, which shows, he thinks, that in a very large percentage of cases the lowered health-status of the mothers is obviously the reason why artificial feeding of the children has to be adopted.

"It does not need any long experience," he goes on to say, "to enable one to predicate that if the mothers are weakly the offspring likewise will be weakly. It follows, therefore, that the reason why so many children are fed on artificial food is that they do not thrive on the breast-milk of their mothers, or that they do not thrive on that alone. Thus in estimating the causes and treatment of marasmus and other kindred diseases in infancy, it seems to me that too little stress is laid on the congenital debilities under which vast numbers of children labor, and too much stress is laid on artificial feeding, especially on the injurious effects of starch-containing food."

He does not question the immense value of good maternal nursing, nor underrate the dangers and disadvantages of artificial feeding. He states that he simply questions the truth of the belief that starch foods are actively injurious, and for the following among other reasons: "That many and many a child is now alive and well to testify against such a doctrine; that in years gone by, before malted foods came into vogue, hundreds of children throve upon milk thickened with a little of one or other of the common starch-containing cereals; that there are no experimental investigations to warrant such an assertion; that, as is well known, animals, when fed on starch, do not get rickets and the diseases usually attributed to starch-feeding; they die of inanition; that the starch taken in with the food passes out with the fæces unaltered. If it could be shown that the starch was broken up into other and deleterious compounds there would be something to go upon, but as a matter of fact the starch passes out of the body unchanged."

In this connection it may be of interest to refer to the examination of the fæces of twenty-four starch-fed infants, made by Dr. H. A. Randolph, two years ago, in the physiological laboratory of the University of Pennsylvania. Although the number of cases was small, the results are certainly unexpected and remarkable, since these showed that the presence of starch was exceptional, and apparently in no degree dependent upon the age of the child. The stools of eighteen out of the twenty-four children contained either no starch or but a trace,—*i.e.*, no more than is frequent in the evacuations of a healthy adult upon a mixed diet. Six of the specimens examined were from children of three months or less, the youngest being but forty-five days old. In many cases the broken and empty cellulose envelopes of the starch-granules were clearly discernible. From these experiments, then, it is concluded that many infants of under three months can digest starchy foods, and that the individual variations in this regard are so numerous that no broad and general statement can be made as to the period at which infants begin to digest starches. It would seem, therefore, if these experiments are to be relied upon, that Mr. Parker and most other writers are mistaken in supposing that starch is not digested by young infants, but passes out of the body unchanged, except it may be in comparatively rare instances. Until the present time, however, it has been an undoubted fact, as he asserts, that the belief in the dangers of starch food during infancy is wide-spread, and generally accepted in the profession. Hence he thinks that there should now be a reconsideration of the starch dogma, and it certainly does seem desirable that a full and impartial scientific investigation of this important subject should be made. But whether his views as to the innocuousness of starch should be confirmed or not, his paper is likely to prove of service in attracting attention to the fact that considerable harm has no doubt resulted from the almost exclusive attention which by many has latterly been bestowed on this element in infantile dyspepsia, and to the importance of more generally taking into consideration the congenital condition which may be largely responsible for the existing athrepsia.

II.—MEDICINE.

Simon: Clinical Varieties, Diagnosis, and Treatment of Broncho-Pneumonia in Children. (*Gaz. Med. di Roma*, May 1, 1887.)

The clinical phenomena of this disease are very variable. At times its development is very rapid, two or three days sufficing to cause extensive involvement of the bronchi and bronchioles, the temperature reaching 40° C. or even higher, the difficulty in breathing being very great, and death resulting from asphyxia. At other times the progress is less rapid, a fatal issue coming, if at all, only at the end of eight or ten days. The disease may take a pseudo-lobar form, the foci of exudation becoming confluent, and yielding some of the physical signs which are found in lobar pneumonia. Both the rapid and the more gradual form are almost always dependent upon a precedent morbid condition of the lungs, and frequently upon bronchitis, measles, or whooping-cough. A third form may also be mentioned which is especially interesting from a therapeutic stand-point. Its beginning is insidious, not infrequently the subject already has whooping-cough. The skin is warm, the cough frequent, but not spasmodic, the throat congested. Percussion reveals nothing abnormal, and auscultation only a few coarse râles. In a short time the temperature rises to 40°, the pulse to 140 per minute, and other indications of severe constitutional disturbance follow. Percussion now reveals exaggerated sonorousness in some areas, and dulness in others; auscultation reveals fine crepitant and subcrepitant râles, especially at the bases of the lungs. After three or four days the symptoms become less alarming, and there is an interval in which the outlook is very hopeful.

This is followed by a relapse with threatened asphyxia, the lungs showing a renewal of the disease, and the belly becoming tympanitic. Again, after several days, there is improvement, and again this is followed by a relapse, as if new portions of the lung-tissue became diseased, those which were originally involved having recovered. The progress of this form of pneumonia is quite suggestive of that which occurs in erysipelas, and the duration is from three weeks to a month. In consequence of the general congestion which is present the renal function is imperfectly performed, and to the phenomena of asphyxia caused by disturbance must be added the influence of the retention of urinary salts, which should be eliminated from the organism. The cerebral congestion induces prostration, which is not relieved simultaneously with an improvement in the local condition of the lungs, consequently there may be pulmonary improvement, notwithstanding a continuance of dyspnœa and frequency of respiration. There may also be paroxysms of cough, like whooping-cough, owing to pressure of the hypertrophied mediastinal glands upon the cardio-pulmonary plexus. With the cessation of the fever the other bad symptoms, vomiting, dyspnœa, and urinary disorders, disappear likewise, but convalescence is usually very slow. The mortality from this disease in hospital practice is about eighty per cent., in private practice about fifty per cent.; for children under three years of age the mortality is yet larger. This disease is to be differentiated from lobar pneumonia and acute phthisis. Lobar pneumonia is rarely seen in children, and occurs without prodromata, while broncho-pneumonia usually follows a general disease, or some other disease of the air-passages. The cough, dyspnœa, pain, etc., are present in both diseases, but are more intense in broncho-pneumonia. In lobar pneumonia the physical signs usually indicate disorder on but one side, with dulness on percussion, weakness of vesicular murmur, soft blowing sound in expiration, and without the fine crepitant râles which are heard in adults. Broncho-pneumonia is located in both lungs; percussion reveals exaggerated resonance in some areas and dulness in others, while by palpation there is an absence of the exaggerated thoracic vibration in the diseased region which is found in lobar pneumonia. By auscultation râles are heard, both dry and moist, crepitant and sub-crepitant, of unequal character, and disseminated through both lungs. Lobar pneumonia in children more than one year of age is not usually a severe disease, defervescence occurring from the sixth to the ninth day. The countenance in broncho-pneumonia is more disturbed and cyanotic than in the lobar form.

In acute phthisis the attack is insidious, it usually follows some general disease, and dyspnœa, asphyxia, and cyanosis occur, in all of which respects it resembles broncho-pneumonia. The physical signs in both diseases are quite similar, and often are identical. If the disease descends rapidly from the apices to the bases of the lungs the diagnosis of acute phthisis may be made, though with some reserve, especially just after a precedent disease of the air-passages. In the treatment of broncho-pneumonia in children the patient should be kept in bed, unless under one year of age, in which case the vertical position is preferable to the dorsal decubitus. The author considers it quite important that the head and shoulders should be higher than the rest of the body if the child is treated in bed. At the beginning of the fever an emetic may be given, but during the subsequent stage of depression such treatment must not be thought of. Such excitants should also be given as will stimulate the pneumogastric nerves; for example, a few drops of acetate of ammonia, or, for a child one year of age, fifteen or twenty grammes of Malaga wine. If this wine should seem too sweet for the child, Marsala, port, or brandy, in suitable quantities, may be given. Sulphate of quinine should also be given, morning and evening,—fifteen to twenty centigrammes for children four years of age, five to ten centigrammes for children one year of age. When tympanites is present magnesia or senna may be given, but not in sufficient quantities to excite diarrhœa. In the early stage of the disease sinapisms should be applied, morning and evening, upon the chest; and by the third day a series of small flying-blisters may be used. The latter should not be allowed to remain more than three hours, after which the wounds should be dressed with vaseline, or some other suitable emollient. Two days after the application of the first vesicant another may be applied in another place, and two days later a third in another place, according to the development of the morbid process. The sick-room must be kept well ventilated but warm, the diet must be light, but nutritious, and if there is decided mental or physical restlessness, an enema containing half a centigramme of chloral should be given. A. F. C.

Proper and Improper Vaccination. (Editorial, *Lancet*, May 14, 1887.)

A recent discussion by the Society of Medical Officers of Health showed that vaccination was often credited with a failure to protect against smallpox simply because it had been inefficiently performed.

The Local Government Board have endeavored to raise the standard in this respect. Their instructions state definitely that at least four separate good-sized vesicles, or groups of vesicles, should be made, so that the total area of vesiculation should not be less than half a square inch. This recommendation is based upon an experience of many years, and the evidence which every smallpox hospital affords that the severity of smallpox in the vaccinated is inversely proportionate to the number of cicatrices.

Rake: Fatal Asphyxia from a Round Worm. (*Brit. Med. Jour.*, June 11, 1887.)

The symptoms noted during life were a slight cough, followed by unconsciousness for five hours preceding death. The autopsy was made by the reporter as a government medical officer, he not having the patient during life.

The child was five years old, and the body was found well nourished. The stomach was full of food (there had been no vomiting); a living worm three inches long was found at the upper orifice of the larynx. It appeared to be lying above the epiglottis. No other worms were found in the alimentary tract. The lungs were somewhat congested, but the viscera otherwise were healthy.

Monti: The Treatment of Epidemic Cholera in Children. (*Arch. di Patol. Inf.* [abstracted], July, 1887.)

Since the discovery of the comma bacillus by Koch, the pathogenesis of epidemic cholera has been placed upon a new foundation, and, consequently, new principles have been found necessary for the treatment of the disease. While the author has witnessed no epidemic of cholera since 1873, he has had opportunity to apply the modern discoveries to many sporadic cases of infantile cholera. The results have been so satisfactory as to completely justify the new methods in so far, at least, as sporadic cholera is concerned, but lack of experience still prevents the author from expressing an opinion as to their practical value in epidemic cholera. The prophylaxis in infantile cholera should be essentially the same as in the form which attacks adults, the peculiar conditions of childhood being remembered. Medication should have two ends in view: 1, the disinfection of the digestive tract; 2, the combating of the threatening symptoms at the same time.

The first indication will be most apt to be followed by good results if carried out at the beginning of the disease. It will be serviceable even if not used until the later stages, and will assist the process of elimination of the choleraic virus. This disinfection of the digestive tract may be attained by irrigation of the stomach or of the intestines. If medication is to be used by the stomach, the substances will vary with the stage of the disease. In the algid stage a solution containing five centigrammes of resorcin and one hundred of distilled water is recommended, or a two-per-cent. solution of benzoate of soda or magnesia. A weak solution of sublimate or a one-half-per-cent. solution of hydrochloric acid may also be of service in sporadic cholera, and possibly in Asiatic cholera as well. In the period of asphyxia the stomach may be irrigated with a solution containing four grammes of sodium chloride, three grammes of carbonate of soda, and one thousand grammes of distilled water. This should be followed by irrigation of the intestine, a soft rubber tube being introduced into the bowel for the purpose, with the use of either of the following solutions: ten to twenty grammes of tannin to one thousand grammes of distilled, boiled, and filtered water, or fifty to one hundred centigrammes of resorcin, or ten centigrammes of sublimate, or ten drops of creasote to one thousand grammes of water; or a one-half-per-cent. solution of hydrochloric acid may be used. The best means which the author has found for controlling the vomiting and diarrhœa are six to twelve drops of creasote, or five to ten centigrammes of resorcin, according to the age of the child. If the patient is not in collapse, suitable doses of the tincture of opium may be added. The best means for controlling the thirst was found to be iced tea with rum. In case such evidences of disturbance of the circulation appear as collapse, cyanosis, and general algidity, the temperature should be raised and the cardiac action stimulated by means of hot-water baths of the temperature of 28° to 32° C., continued from ten to thirty minutes, and by mustard-baths. In some cases in which there were grave symptoms of collapse, from one hundred to two hundred grammes of water were injected several times under the skin with good effect. During the period of reaction, should the temperature be high and the pulse rapid, warm baths, hydrochloric acid, or quinine may be given. During the period of convalescence the greatest attention must be paid to the diet. In the typhoid form of cholera one should prescribe warm baths and, at suitable intervals, the tannate of quinine. Should uræmic symptoms appear warm baths should be given, and, internally, flowers of benzoin, quinine, or camphorate of quinine. The best form of diet for this condition is the milk diet, which should be continued until the secretion of urine becomes normal. Should complications appear, they may be met in accordance with customary therapeutic measures. A. F. C.

Saltmann: Eclampsia in Children. (*Arch. di Pathol. Inf.* [abstracted], July, 1887.)

The author defines infantile eclampsia as a series of acute, general, clonic, or clonico-tonic, convulsive attacks, of epileptiform character, occurring in the earliest period of life, and independent of material alterations in the central organs. There may be sympathetic or reflex and hæmatogenous eclampsia. This condition is very common, not only among new-born infants, but also among those who have reached the second half of the first year of life, for during this period the general excitability of the peripheral nerves is exaggerated, while the psycho-motor centres are developing but are as yet unable to actively oppose the reflexes. Eclampsia is more likely to occur in children who have inherited from their parents some neuropathic tendency. Sympathetic or reflex eclampsia is determined in most cases by mechanical stimulus to the peripheral nerves. Eclampsia which is associated with dentition, as well as that form which is due to the irritation of intestinal worms, should be recognized as well from a physiological as from a pathological stand-point. Under the name of hæmatogenous eclampsia the author refers to that form which is excited in the course of febrile diseases, inflammations, infectious diseases, constitutional anomalies, etc., from alterations in or around the vascular system. The so-called idiopathic eclampsia is not recognized by the author, since there can be no attack without sufficient external cause. The prognosis in reflex eclampsia is considered more favorable than in the hæmatogenous form. The prognosis is most grave in those attacks which occur in connection with pneumonia and whooping-cough. As to the differentiation of attacks of eclampsia from those of epilepsy, the author knows of no means whereby it may be accurately accomplished. The epileptic attack is an evidence of a mixed chronic neurosis, while eclampsia always indicates an acute one. In the intervals between the eclamptic attacks the condition is one of health, just as it is in hysteria. In the way of prophylaxis the only treatment which is suggested is a wholesome and adequate diet; during the time that the child is a sufferer from the disease one must encourage him to rest and provide fresh air in abundance. In reflex eclampsia the author has sometimes succeeded in cutting the paroxysm short by pressing upon the base of the tongue with the handle of a spoon. Emetics and rectal enemata have also been found serviceable, but incision of the gums is not considered a useful procedure; on the contrary, it is believed to be improper for children in the first year of life. In the treatment of the hæmatogenous variety the author has derived no benefit from the use of the ammoniacal sulphate of copper, nor from the nitrate of silver, nor the bromide of potassium. He is in the habit of using, especially in the chronic form of eclampsia, a mixture containing one centigramme of atropine, five centigrammes of dilute sulphuric acid, and ten grammes of distilled water. This is given in ten-drop doses, one, two, or three times daily. Tincture of amber or of musk may also be given in two- or three-drop doses, every ten minutes. Opium, morphine, and chloroform are, as a rule, contraindicated. Chloral serves well as a hypnotic in quantities of one gramme daily. Nitrite of amyl should be used with the greatest caution. Compression of the carotids is not advisable. A. F. C.

Suss: Diphtheritic Paralysis of the Pneumogastric (*Rev. Mens. des Mal. de l'Enf.*, August, 1887.)

The author draws the following conclusions:

1. In the course of diphtheritic paralysis functional troubles are often observed in the sphere of the pneumogastric nerve.
2. The effect of these troubles is seen with reference to the heart's action in slowness, quickly followed by acceleration and smallness of the pulse. Præcordial pain and violent pain in the heart itself are usually associated with these conditions.
3. With reference to the respiratory passages, the symptoms are dyspnœa and sometimes great irregularity in inspiration and expiration. Less frequently patients suffer from Cheyne-Stokes respiration.
4. With respect to the digestive passages, there are very violent gastro-intestinal pains, and almost always vomiting of food or mucus.
5. Should all these symptoms be associated the disease would usually run a rapid and fatal course, probably within twenty-four hours.
6. If the pulmonary—and, still more, if the cardiac—symptoms are isolated, we may look for a cure in some cases, though it is not possible to say with what frequency.
7. All of these accidents occur most frequently in the progress of a paralysis of the velum of the palate. The presence of this condition should compel a physician to give a very guarded prognosis.
8. The only treatment which has been of any benefit for this diseased condition is electricity, which may be applied over the cardiac region or over the posterior region of the chest.
9. It is absolutely certain that the heart-clots found *post mortem* in the cases which have been studied by the author as

the basis of this paper have no bearing in explaining the phenomena which have been referred to.

10. The bulbar lesions which have been found in the course of these investigations could account for the pulmonary and cardiac disturbances only in isolated cases, and could give no information as to their curability.

11. Changes in the terminal branches of the pneumogastric—that is, in the fibres of the pulmonary, cardiac, and abdominal plexuses—can alone explain the peculiar phenomena which were observed in the study of the author's cases. The complete explanation must come from histological investigation, which will be supplementary to the author's clinical studies. A. F. C.

Zinnis: The Treatment of Broncho-Pneumonia in Children with Iodide of Potassium. (*Rev. Mens. des Mal. de l'Enf.* [abstracted], August, 1887.)

The author has recently used this means of treatment in several cases of broncho-pneumonia, the children ranging from six months to five years of age, the results of his clinical experience being expressed in the following conclusions:

1. The iodide of potash has in most cases seemed to be useful, but its action is more satisfactory when it is given from the beginning of the disease than if it is commenced at a later period. It is of doubtful efficacy in measles or whooping-cough.

2. It is an agent which acts much more effectively with vigorous children than with those who are weak and scrofulous. Its advantages are much more pronounced for children between the ages of one and five years than for very young infants.

3. Its action is much more prompt and more certain in the more acute than in the less acute period of broncho-pneumonia.

In doses of fifty to one hundred and fifty centigrammes with one hundred grammes of water it lowers temperature by one or two degrees after a few days of use, diminishes the frequency of the respiration, softens the cough, and facilitates expectoration. If any improvement is to be obtained it will be noticeable after taking the salt two or three days. A perfect cure may be obtained more quickly from its use than from any other. Dry cups and flying-blisters may be used at the same time. A. F. C.

Raudnitz: The Use of Phosphorus in Rachitis. (*Arch. di Patol. Inf.* [abstracted], May, 1887.)

This treatment, which was inaugurated by Epstein, has been persistently tried by the author. At first it was given with cod-liver oil in very small doses, five milligrammes of the phosphorus being combined with one hundred grammes of the oil. In most cases its use was followed by profuse diarrhœa and bronchitis, and as this occurrence was so frequent the conclusion seemed warrantable that the medicine was responsible for it. A mixture was then prepared by the author from the following formula:

℞ Phosphori, .01 gramme;
Ol. amygdal., 80 grammes;
Pulv. gum. arab.,
Sacchari alb., āā 15 grammes;
Aq. destil., 40 grammes. M.

The value of this and of other preparations of a similar character was found so problematical, however, that they were given up. In order to give a reliable opinion as to the usefulness of phosphorus in the treatment of rachitis, the author holds that one must first be certain that the diagnosis of rachitis is correct and that the disease is in full development. The evidences which are ordinarily accepted as indicative of rachitis are enlargement of the epiphyses, unclosed condition of the fontanelles, and an absence of teeth or teeth characteristically displaced. Only the peculiar changes in the bones should be considered as positive evidence of the disease, the changes being the visible result of the rachitic process. If the means of treatment is efficient, its use for two or three weeks should be followed by a decided change in the patient's condition, the fontanelles should cease to enlarge, the long bones to become curved and distorted, and there should be a cessation of the characteristic sweating, the febrile attacks, the laryngo-spasm, the digestive disorders, the bronchial catarrh, etc. If these changes do not occur to a greater or less degree, it could not be affirmed that the phosphorus was having a curative effect. The author also believes that simple regulation of the diet will be followed by cure in many cases. This will require the careful treatment of each case by itself, and upon its own merits, and will include systematic microscopical examinations of the alimentary residue contained in the fæces. Finally, according to the opinion of Schwechton and other authors, if phosphorus is to be given at all it should be given in a form which is not readily decomposed, and *not* with a fatty substance for an excipient. On the other hand, Trousseau, Schnitzer, Gambrini, and others consider cod-liver oil as the specific for rachitis. It must be remembered, too, that cod-liver oil and vegetable fats are not well tolerated by children. In view of these facts and certain others, it occurred to the author that a suitable preparation of phosphorus could be obtained by dissolving it in water impregnated with sulphide of carbon. Such a preparation was finally obtained, and by slowly adding a small portion of sugar to each dose it was found that a child could take a dessertspoonful for a week, morning and evening, without any disturbance to the digestive functions. He then tried it in fifteen cases of rachitis in children, and found it very well tolerated. As to the positive action of the phosphorus upon the disease by this method of administration, he hesitates to give a positive opinion until there has been a much greater accumulation of evidence. A. F. C.

III.—SURGERY.

Herz: Treatment of Intestinal Invagination in Children. (*Arch. di. Patol. Inf.* [abstracted], May, 1887.)

It is believed by the author that in many cases of intestinal invagination spontaneous reduction will take place if the patient is relaxed by anæsthetization, or at most with the use of moderate taxis. Should the case be rebellious to such means, a large volume of air should be injected into the intestine, to be followed, if necessary, by a sufficient quantity of water. The more recent the invagination and the lower in the abdominal cavity its situation, the better will be the chances of success. The child should be placed upon his back with the knees bent, and a gum-elastic catheter should be introduced as far as possible. Through this the air should be slowly forced for about two minutes; during the intervals of injection massage being mildly practised over the supposed seat of invagination. If water is to be injected, a warm bath should first be given, lasting half an hour. The child should then be anæsthetized, the head and shoulders being on a higher plane than the abdominal cavity, and three or four litres of water slowly and gently injected, the greatest care being taken to avoid rupturing the intestine. Instead of three or four litres of water at the ordinary temperature, a single litre of very cold water may be used. Should these means prove unavailing, the only resource remaining is laparotomy. A. F. C.

Demme: The Use of Iodol in Pediatric Surgery. (*Arch. di Patol. Inf.* [abstracted], July, 1887.)

The author uses iodol in the following ways:

1. As a powder to be sprinkled over deep wounds, for example, after scraping away tuberculous deposits.
2. Upon ulcerative necrotic surfaces, such as may be produced by extensive burns.

3. As a powder to be sprinkled over fresh incised or lacerated wounds.

The wounds are subsequently covered with a dressing of boric lint, over which is a layer of cotton-wool. The dressing is renewed every two to five days, and it has usually been found that the secretions are odorless, and the granulations healthy in appearance. Compared with iodoform, it does not become encrusted with the secretions like the latter, which is sometimes detached with difficulty, and may excite hemorrhage. In removing the iodol from a wound it is best to wash it away with a one-per-cent. solution of carbolic acid, or a two-per-cent. solution of boric acid. Tampons of cotton or of borated lint charged with oil of iodol or iodolated glycerin in the proportion of one of iodol to two or four of glycerin may be used to fill cavities which have been opened and scraped. Iodolated gauze of the same percentage strength and similarly prepared as iodoform gauze may be used as a substitute for the latter. Under the use of this gauze the granulation process progresses more satisfactorily than with the use of the oil of iodol or the iodolated glycerin. No symptoms of poisoning nor any harmful effects upon the digestive organs were observed from the use of the iodol. In two cases of extensive burns in which a large quantity of the iodolated glycerin was used, iodine was recovered from the urine one and a half hours after its use was begun. The local antiseptic action of the iodol appears to consist in the permanent separation of a very small quantity of iodine at the surface of application. Before or after absorption more or less of it probably combines with certain alkalies and albuminoids. It is not proper to lose sight of the possibility that the system may undergo toxic effects from iodol in the same way that it does from iodoform. A. F. C.

O'Dwyer: Fifty Cases of Croup in Private Practice treated by Intubation of the Larynx, with a Description of the Method and of the Dangers Incident thereto. (*Med. Rec.*, October 29, 1887.)

Intubation was never resorted to until the symptoms of laryngeal obstruction were so urgent as to plainly indicate impending suffocation, unless the child were relieved by operation. These symptoms were marked recession of the supraclavicular and episternal regions, restlessness, and absence of respiratory murmur over the lower posterior portion of the lungs. Persistent cyanosis was also present in many of the cases, but this comes too late and is too uncertain a symptom to wait for. In twenty-four of the cases the urine was examined, and albumen found in nineteen of them. Thirty-eight of the patients died and twelve recovered. The cause of death was due in eighteen cases to extension of the membrane to the bronchi, in five cases to exhaustion, in five cases to nephritic complication, in four cases to pneumonia, in three cases to sepsis, in one case to œdema of the lungs, in two cases not stated, as they were not seen after the operation. In the twelve cases that recovered, the tube was retained an average of five days and seven hours. The thirty-eight cases that died lived, on an average, two days and seven hours after intubation. The duration of the laryngeal symptoms before intubation averaged three days and six hours in those that recovered, and two days and six hours in those that died.

No autopsies were obtained. A description of the operation is given, in which the author lays some stress on the fact that no force is necessary either in the introduction or removal of the tube. In cases that progress favorably the tube should be removed on about the fifth day. In the youngest of the cases that recovered, aged fifteen months, it was worn nine days, and had to be reinserted on the eleventh day, but was retained then only two hours. The age, therefore, must be considered in determining the time the tube should be removed. It can, as a rule, be dispensed with earlier in cases of slow than in those of rapid development. If loose membrane exist below the tube, which is indicated by a flapping sound, with a somewhat croupy character to the cough, it should be left in position until this has had time to dissolve and disappear. The tube should be removed whenever urgent secondary dyspnœa occurs, as it is often difficult to say whether the obstruction is in the tube or lower down. Not unfrequently a spasmodic dyspnœa occurs soon after the removal of the tube. This is due to contact of the inspired air with the eroded and inflamed mucous membrane which had been so long covered up. It will be more likely to happen where the larynx has been very much irritated by repeated attempts at extraction. It usually subsides in about an hour, especially if aided by an anodyne. He has tried cocaine spray in two such cases without benefit. Giving an antispasmodic about an hour before the intended removal of the tube will tend to lessen this difficulty and to allay the persistent, irritating cough which sometimes follows the removal of the tube, and which nothing so promptly relieves as its reinsertion. He coated the upper part of the canula, on its first introduction, with gelatin containing a large percentage of cocaine in two cases, but found it objectionable from the fact that it diminished the cough, which is so essential to get rid of the secretions. He now uses the gelatin, applied in this manner, medicated with boric acid, which combines mild astringent with antiseptic properties. As this form of application is a continuous one, the drug used should be mild.

Gelatin swells considerably as it absorbs moisture, and will produce painful dilatation if the tube is coated too thickly with it.

Some of the accidents that occur in practising intubation of the larynx are avoidable, and are due to want of previous practice on the cadaver. The first accident liable to happen is apnœa, from prolonged efforts at introduction. There is very little danger of this if the time occupied in such attempt be not more than ten or fifteen seconds. Second, the anxiety to succeed quickly will tempt the operator to use force, thereby running the risk of making a false passage. To avoid this accident the introducing instrument should be held lightly between the thumb and fingers, with the thumb resting lightly on the upper surface. Third, injury to the larynx in removing the tube by passing the extractor down on the outside of the latter, opening it widely and removing it with force. If the extractor is in the tube, no resistance whatever is felt in removing it. Fourth, the most serious of the unavoidable accidents liable to occur is pushing down membrane before the tube in sufficient quantity to produce asphyxia. Fifth, coughing out the tube before the stenosis has been permanently relieved is seldom attended with any danger, as the dyspnœa is usually relieved for several hours afterwards. Sixth, blocking up of the tube with masses of pseudo-membrane too large to pass through. Seventh, the lumen of the tube sometimes becomes slowly but seriously encroached upon by adhesion of the tenacious secretions in those cases of croup that are called dry, particularly if there is very little cough. Those that cough the most, provided they get sufficient sleep, as a rule do the best.

Bibliography.

A TREATISE ON DIPHTHERIA, HISTORICALLY AND PRACTICALLY CONSIDERED: INCLUDING CROUP, TRACHEOTOMY, AND INTUBATION. By A. SANNÉ. Translated, annotated, and the Surgical Anatomy added, by HENRY Z. GILL, A.M., M.D., LL.D. Pp. xxx and 656. St. Louis: J. H. Chambers & Co. 1887.

Gill's translation of Sanné on diphtheria is a bulky volume of over six hundred pages, whose reading is not to be lightly entered upon as a summer afternoon's pastime. The book is a perfect encyclopædia of historical facts, theories, statistical tables, etc., gathered from all sources, and often, it must be said, not well arranged, hence contradictory and exasperating. Take, for instance, the relation of bacteria to the diphtheritic membrane. The reader of pages 57-69, written by Dr. Sanné, would be led to believe that the "vegetal forms, microphytes and vibriones," found in the diphtheritic membrane, were of the slightest, if any, importance. The readers of pages 372-374, which describe Löffler's bacillus, would be brought to an exactly opposite conclusion, and yet there is no previous hint of any such contraction, nor even of Wood and Formad's experiments, in the section devoted to the "Parasitic Elements." In short, on this subject, as on others, the facts are not systematically arranged, but evidently gathered by different hands and inserted where most convenient to the printer. The book, therefore, would be greatly improved by a revision or a system of cross-references which would enable the student to connect all parts of a given topic, a feat almost impossible under the present system, even with the aid of the general index. This is most exasperatingly shown in the so-called "list of authors and works referred to" (pages xiv–xxii). The works referred to are omitted entirely, and the alphabetical list of authors is of no more practical use to the reader than Homer's list of ships. If such an index of authors is of any value at all to the student it is to assist him to a knowledge of their views on diphtheria, but Sanné's—or is it Gill's list?—neither tells when, what, or where these authors wrote. The views of almost all of them can be found in the body of the book, and had this list been indexed accordingly it would have been a valuable addition, but, as it is, it strongly looks as if the names of these six hundred and sixteen authors had been added to pad out an already too voluminous work.

Repetition is another of the charges justly to be brought against the book, for almost identically the same statements may be found repeated under the heads of pathology, localization, and prognosis. The facts therein contained are valuable, and have been gathered with great diligence from many sources, but too much space is given to fighting again the battles of Virchow and Bretonneau, and too little to more modern methods and investigations. This especially is true of the section on treatment, wherein ample space is given to a discussion of liver of sulphur, and but a single line to corrosive sublimate, by many esteemed the most valuable of antidiphtheritic remedies. Alcohol is spoken of as the best of all remedies, but there are no specific directions as to how it should be given. Dr. Chapman's directions surely would not have come amiss here. The whole section, full as it is historically, is practically disappointing, especially to the younger practitioner. He may, in general, be prepared to admit with Sanné that "the specific remedy for diphtheria is not yet discovered," possibly may doubt whether it ever will be; but, granting these facts, the great question with him is, What is the best thing to be done under the circumstances? If he follows the agnosticism of the book before us, his treatment will practically resolve itself into the use of alcohol and "perchloride of iron, which at least possesses the advantage of being a ferruginous remedy," and waiting for something better, or tracheotomy. Local applications are discouraged as being either useless or harsh and painful. And this is the best that six hundred and fifty pages of the accumulation of wisdom from the days of Asclepiades to A.D. 1887 can offer. Far more rational is the advice of Goodhart, who "first and foremost places local applications, undeterred by the fact that they have often proved ineffectual." And any one who has locally used peroxide of hydrogen, conjoined with constitutional medication, will not soon abandon its use for the *laissez-faire* method, even though in the opinion of many eminent teachers any other is useless and harmful.

But he is a purblind critic who cannot find something to carp at in a book of over half a thousand pages. Still blinder is he who cannot find much valuable information in Sanné on Diphtheria. If he has time and taste for historical studies, he can gratify them in regard to this dread disease, and especially in the matter of tracheotomy,—no new operation, by the way, for the earliest writers on diphtheria speak of laryngotomy as being "tried by the ancients," *ne lantum scelus augusta oratione damnemus.* A good third of Sanné is devoted to the discussion of the same old question. In the opinion of the writer this part, largely the work of Dr. Gill, is by far the more valuable of the book. If we read aright between the lines, the American edition of Sanné on Diphtheria is edited by one whose tastes incline more to surgery than medicine, and hence his very thorough and excellent discussion of the operation, dangers, and complications of tracheotomy. This part of the work is prefaced by a chapter by Dr. L. S. Pilcher, of Brooklyn, on tracheotomy in children, unfortunately dislocated from its proper position, and evidently an after-thought by Dr. Gill; but so good a one that the reader wonders why he and Dr. Pilcher did not prepare a monograph on tracheotomy and leave all the rest of Sanné on Diphtheria in its original tongue for our more leisurely French *confrères.* M. P. HATFIELD.

THE

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DISEASES OF THE HEART AND CIRCULATION IN INFANCY AND ADOLESCENCE.[1]

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AND

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(Concluded from November Number.)

DISEASES OF THE BLOOD.

THE blood consists of two primary elements, cells floating in an albuminous menstruum; the former constitutes a little less than one-half by weight of the blood; the menstruum, or blood-plasma, is almost entirely water,—about ninety per cent.,—the remaining portion consisting of proteids, the elements of fibrin, salts, principally sodium chloride and sodium carbonate, a trace of sugar, some fat and creatin, hypoxanthin, and urea.

Of recent years four forms of corpuscles have been described,—red, white, nucleated red, and the hæmatoblasts,* or blood-plates,† or invisible corpuscles.‡ The red blood-corpuscles are present in each cubic millimetre of blood to the

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* Hayem. † Bizzozero. ‡ Norris.

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number of about five millions; they have a fairly uniform size, stated by Hayem to be about 7.5 μ*; this is about $\frac{1}{3200}$ of an inch.

The colorless corpuscles are about 10 μ, or $\frac{1}{2500}$ of an inch, in diameter; they are nucleated, and have a granular protoplasm; at the temperature of the body in healthy blood they present amœboid movements. They are present in a cubic millimetre of blood in the proportion of about one to three hundred, or one to five hundred red corpuscles. The nucleated red corpuscle is seen in the blood of the fœtus and infant; at the fourth year they have entirely disappeared, so that the blood of a healthy adult will be without them; they are normal constituents of the marrow of the long bones. Their nuclei may be single or multiple; three have been noted; they are colorless; in some cells grouped together, in others not, again in others they may protrude from the cell. The corpuscles are about $\frac{1}{1800}$ of an inch, some being colored quite as the ordinary red corpuscle.

Lastly, the hæmatoblasts† are small, colorless corpuscles, varying in size, but of an average of 3 μ in diameter. They are found in perfectly healthy blood. The hæmatoblast is a separate blood-element, and not the result of any disintegrating process in any of the other forms of corpuscles; it is intimately connected with the production of fibrin.

Having now considered the four blood-elements, it becomes interesting to inquire into their origin. The manner of formation of the blood-plates, or hæmatoblasts, is to us as yet a sealed book; we know absolutely nothing about them. Osler remarks that they occur under the most diverse conditions,—in the young organism, just commencing life, and, on the other hand, in the old, worn-out, cachectic individual, just about giving up life. Nor is the manner of the development of the red corpuscles settled beyond question; it is said that they originate from the colorless corpuscles and the lymph-cells, or leucocytes; that the thymus gland, the gland-tissue of the tonsil, the spleen, the adenoid, or lymph, tissue of the intestines, all are situations in which the red cells may develop from the leucocytes there created. That the red corpuscles may develop from the nucleated red corpuscles is at least established as far as the embryo is concerned; as the child grows the nucleated red cells disappear, except in the red marrow.

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* μ is used as a symbol for a micro-millimetre, or $\frac{1}{1000}$ of a millimetre.

† Synonymes: *Blutplättchen*, *microcytes*, *elementary corpuscle* (Zimmermann), *globulins* (Donné), *grains sarcodiques* (Vulpian), *granulations libres* (Rauvier), *Schultze's masses*.

Osler* has observed that the nucleated cells appear to originate from colorless marrow-cells, which gradually become more homogeneous with hæmoglobin developing in the protoplasm; eventually the nucleus will disappear or degenerate, and the cell has the appearance of an ordinary red corpuscle.

The same observer has seen and sketched cells that were budding from the marrow-cells.†

Bizzozero states that the nucleated red corpuscles are independent blood-elements, developing by fission, and with the disappearance of the nuclei they constitute the ordinary red corpuscles.

There seems to be a unanimity of opinion in regard to the origin of the colorless corpuscles which develop from the cells of the follicular cords in the lymph-glands and adenoid tissues; the stages and manner of this development have not, however, as yet been fully worked out.

Space forbids us pursuing the extremely interesting study of the relation of the cytogenetic organs to the blood-formation, or as to what ultimately becomes of the red corpuscles.

PLETHORA.

In the healthy infant at birth there is always a condition of comparative plethora, as at this time the blood by weight amounts to one-eighteenth of the body, while in the adult the relation is one-twelfth to one-fourteenth. The so-called plethora of the older writers is scarcely admitted to our classification of to-day. If the organs of secretion and excretion are normal, they maintain the quantity and quality of the blood at about its normal standard.

Osler considers that those individuals with red faces, full vessels, and bounding pulses, who give the impression of a greatly distended circulating system, present this appearance more as the result of an active blood-distribution than of an actual increase in the total volume; he doubts if the evidence will support the view that a rich and abundant diet, without much exercise, will permanently increase the amount of blood.

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* Centralblatt f. d. Med. Wissench., 1878.

† Trans. Am. Assoc. Adv. Sci., 1882; Am. Syst. of Med.

Cohnheim coincides in this view by stating that, "except as a transitory state, polyæmia does not occur under any circumstances."

In those individuals who are popularly known as "plethoric" we probably have a condition of distention of the superficial vessels, in the face notably, and not a general increase in the blood-mass, cells, and plasma; these persons may, however, have a superabundance of red corpuscles, polycythæmia rubra; observers have noted cases in which the red corpuscles were markedly increased in number. Of course in those patients who have suffered a great loss of fluid there will be found an increase in the cells.

ANÆMIA*

Is a systemic disorder dependent upon a definite lesion, which, thanks to recent observers, can be demonstrated with the utmost precision and satisfaction. The causes of anæmia may be conveniently considered under two headings, predisposing and exciting. Under the former we may mention sex, age, and constitutional peculiarities; and of the latter the most prominent are undoubtedly hemorrhage and the general fevers. Anæmia may be congenital, as in the following case reported by F. P. Henry:† Mary C., born at 5.20 A.M., November 5. Count made at 2.30 P.M., November 6. Child weighed six and three-quarter pounds at birth; labor normal. Number of red corpuscles per cubic millimetre, three million six hundred and twenty-five thousand; proportion of white cells to red, one to one hundred and forty-five. This case was undoubtedly one of congenital anæmia. The child's only appearance of malnutrition was a shrivelled state of the integument of the feet and a less rosy color of the skin than normal. For a new-born child it was decidedly pale. This shrivelled state of the skin emphatically negatives the idea of a relative anæmia from excess of fluid. The blood was probably deficient in quantity (oligæmia) as well as defective in quality (oligocythæmia). There was also a decided increase in the number of the white cells. There had been no hemorrhage from the umbilical cord. As other causes it is well to bear in mind sexual excesses, deficient food or faulty assimilation, or bad hygienic surroundings, a long-continued albuminous drain, as by prolonged suppuration or chronic Bright's disease. A severer form of anæmia is of course produced by a large hemorrhage; but it is worthy of note that the human organism is able to withstand the loss of a very large quantity of blood and ultimately make a complete recovery, as the process of blood-reformation commences and is carried on with astonishing rapidity, requiring, however, many months before the cellular elements have regained their normal state. In other cases it may never be restored, and a condition to which we will refer more fully will arise, and the patient never recover. Even as the corpuscles increase in number the hæmoglobin does not also increase; so that the corpuscles while normal in number have a lowered hæmoglobin percentage.

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* Synonymes: *Spanæmia*, *oligæmia*, *oligocythæmia*, *anémie*, *anämie*.

† Anæmia, Phila., 1887, p. 18.

Profound anæmia may be produced by the action of poisons upon the blood, as by lead, arsenic, or mercury. Anæmia is also a concomitant of syphilis and malaria. Recent investigations* seem to show that in the latter disease a micro-organism may be the active agent in destroying the red corpuscles, these bodies occupying the interior of the red corpuscles and occurring free in the plasma; some are ciliated, or at least have prolonged, wavy terminations that are seen with difficulty, others are crescentic.

Anæmia may be produced by a disturbance in the functions of the organs upon whose integrity the blood-elaboration depends. We approach this subject with some hesitancy on account of our want of knowledge of the process of hæmatogenesis. Our study has, however, progressed sufficiently for us to state with a certain degree of assurance that the spleen, the bone-marrow, and the general lymphatic tissues are the primary seats from which the matured red corpuscle finds its way into the general circulation; the marrow and the spleen seem also to possess the power of blood-destruction; as Osler aptly puts it, "they consume their own smoke, using the waste-products for the purpose of further manufacture."

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* Welch, Osler, Councilman, and Italian and East Indian observers.

A somewhat peculiar fact is that with impaired activity in the blood-making tissues we note an increase in size in these structures. How different, then, is this change, as we are accustomed to associate decrease in the size of an organ as synonymous with want of functional activity! We are able to conclude, however, that a progressive increase in size of the blood-making organs will sooner or later cause or be attended by a more or less profound anæmia. This change pertains whether one or all of the blood-making organs or tissues are affected. Furthermore, all the most important and essential symptoms of anæmia will be present, even if but one organ is affected, as the spleen or bone-marrow, or if the entire series are impaired. But the diseases caused by affections in the various blood-making tissues have received different names, and may be classified, as Osler states, in the following manner:*

- Primary or cytogenic anæmia.
  - Leucocytic. — Leukæmia.
    - Splenic.
    - Lymphatic.
    - Medullary.
  - Non-leucocytic.
    - Splenic, anæmia splenica.
    - Lymphatic, Hodgkin's disease.
    - Medullary, idiopathic anæmia (certain cases).

To consider this little chart more carefully we will start with—

Simple anæmia (primary or cytogenic anæmia).—This is a frequent form; sometimes its etiology is extremely difficult to interpret, at others its association with profound malarial intoxication is marked; the spleen is usually much enlarged;

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[*] Henry (*ibid.*) makes a more elaborate classification under the head of *primary anæmias*, *secondary anæmias*, *toxanæmias*, and *parasitic anæmias*.

rarely are the lymph-glands noticeably increased; some authorities style it the splenic form of Hodgkin's disease, or pseudo-leukæmia.

Lymphatic anæmia (enlargement of the lymph-glands accompanied by anæmia) is the condition styled Hodgkin's disease, or pseudo-leukæmia. In this disease the spleen and marrow are not often affected, but there may be a general increase in size of the lymphatic elements of the body, with nodular enlargements in the organs; to differentiate this disease from lymphatic leukæmia recourse must be had to the microscope.

Medullary anæmia.—This form of anæmia is as yet an undecided problem in the study of hæmatogenesis, some observers regarding the changes in the marrow as a consequence of the anæmia, others as its cause. Cohnheim and Pye-Smith regard medullary anæmia as an established fact, Pepper thinks that the so-called idiopathic anæmia may have its starting-point in changes in the bone-marrow.

Osler considers, however, that we have not as yet arrived at a true solution of the condition, as alteration and hyperplasia in the bone-marrow has been noted in wasting diseases, and, furthermore, cases of idiopathic anæmia are recorded in which the marrow was normal. As we see by the chart, we may also have a splenic, lymphatic, or medullary *leukæmia,*—that is, an anæmia attended by an increase of the colorless corpuscles.

As in simple anæmia the splenic form was the most frequent, so in leukæmia.

Splenic leukæmia, in all features save the excess of colorless corpuscles, is identical with splenic anæmia.

Lymphatic leukæmia.—This is a less common affection than lymphatic anæmia, or Hodgkin's disease; rarely is it met as a primary uncomplicated disease. It is usually seen in association with enlargement of the lymph-glands, or of the tonsils, or Peyer's glands.

Medullary leukæmia.—A myelogenous form of leukæmia is a well-recognized clinical fact. Neumann regards the marrow changes as the most essential and important, and would relegate to the lymph-glands and spleen a secondary part in the process.

Whether it is advisable for us to clinically divide cases of anæmia and leukæmia is as yet among the undetermined problems of medicine, but, to quote the words of Osler, "It seems questionable whether such a variable feature as increase in the colorless corpuscles should be permitted to separate diseases which have all essential characters in common. We shall probably, however, continue for a long time to speak of these conditions as separate and distinct, but it is evident, as time goes on and our knowledge of the diseases and of blood-development increases, the identity of many of them will be acknowledged, and we shall find that here, as so often the case in natural history, the multiplication of species has been the result of imperfect information, and that as points of resemblance in essential characters and development are studied minor differences disappear."

The characters of the blood of a new-born child.—The appearance of the blood of a new-born child as it issues from the capillaries is almost that of venous blood; this condition continues until about twelve days after birth.

The red cells are much more unequal in size than are those seen in the blood of a person after adolescence, the larger being larger and the smaller smaller than in the adult; their intimate composition, however, differs very slightly from those of an adult. The corpuscles osmose and deform more rapidly when in contact with reagents or with water, the small cells notably being transformed into spherical globules.

The number of red cells contained in a cubic millimetre is almost as great immediately after birth as in the most vigorous adult, and is nearly always greater in number than that found in the blood of the mother. Out of seventeen children whom Hayem examined the largest was six million two hundred and sixty-two thousand, and the smallest four million three hundred and forty thousand.

The result shown by these numbers appears to be influenced by the manner in which the cord is tied. Out of six children who had the cord tied immediately, the average number was five million eighty-seven thousand. Of eight children in whom the cord was not tied until the umbilical artery had ceased pulsating the average was five million five hundred and seventy-six thousnad, a difference of four hundred and eighty-nine thousand in favor of the latter. This difference persisted more or less for forty-eight hours, though at this time it was not greater than four hundred and thirty-two thousand.

The coloring-matter, judged by the chromometric examination, is about the same in a child as in the adult.

At the moment of birth the same variety of white cells exist as in the adult.

Frequently the cells are a little smaller, the smallest being most abundant.

(Hæmatoblasts also exist in the blood of the infant, as we have stated earlier in this chapter.) During the first two or three days the number of white cells is greater than in the adult; the average of Hayem's count for the forty-eight first hours after birth were eighteen thousand white cells to a cubic millimetre, whereas in adults they are five thousand.

After birth the blood of the child shows some modification. During the period which corresponds to diminution of weight in the child, the number of red and white cells remains stationary or gradually increases until the child arrives at its minimum weight; that is usually in about three days. There is then a sudden and abrupt diminution in the number of white cells: from eighteen thousand it descends to six or four thousand; and an elevation in the number of red cells, which at this time generally reach their maximum.

Henry presents the following counts:

CASE I.—Healthy girl; weight, eight and a half pounds; blood venous-looking two and a half hours after birth; number of red cells, six million four hundred and ten thousand per cubic centimetre; second count, twenty-four hours later, five million eight hundred and ten thousand; third count, forty-eight hours after last, five million six hundred and eighty thousand.

CASE II.—Male; weight, eight pounds; first count, twenty-four hours after birth, five million nine hundred and twenty-five thousand per centimetre; second count, twenty-four hours later, five million five hundred and twenty thousand; third count, forty-eight hours later, four million eight hundred and seventy thousand.

CASE III.—William, born November 6, 5 A.M.; weight, six and a half pounds; November 7, four million five hundred and twenty thousand; white to red, one to nine hundred and four; second count, November 8, 11 A.M., red cells, five million three hundred and thirty-five thousand; white to red, one to seven hundred and eleven.

CASE IV.—Sela, female, born November 17, 8.15 A.M.; weight, seven pounds; rapid, normal labor; healthy child; November 19, 10.30 A.M., five million one hundred and eighty-five thousand; white to red, one to three hundred and fifty; second count, November 21, 4 P.M., number of red, five million four hundred and ninety-five thousand; white to red, one to six hundred and twenty-eight.

The diminution in number of white cells is a constant phenomenon, but in some children the minimum number of these cells is not reached until twenty-four hours after the body-weight has reached its minimum.

The rate of increase in the number of red cells is variable, from one hundred thousand to six hundred thousand.

The increase of the red globules does not depend altogether upon the loss of serum, but is due to the production of new elements.

At the time when the child begins to gain weight the number of white cells increases a little, usually averaging from seven thousand to nine thousand per cubic millimetre.

The number of red cells is less than in the adult, and in the course of the second week there is usually a difference of about half a millimetre from the first count (above recorded).

The changes in the histological character of the blood and in the diameters of the cells differ much day by day, and it is in this particular that the child's blood differs from the adult.

For a normal child these differences at the end of the third day are totally independent of body-weight; they appear to be due to the formation of new elements,—that is to say, the number of cells is in inverse ratio to the size of the cells.

As we see then the blood of the new-born presents certain characteristics, together with certain cellular forms, which belong peculiarly to itself; the daily fluctuations which we have noted above are due to the process of evolution. The *specific gravity*[*] of the blood is highest at birth, 1.066. It is lowest between the ages of ten weeks and two years,—1.048 in boys and 1.050 in girls.

CHLOROSIS.

Chlorosis is a form of anæmia presenting certain special features which will necessitate its separate consideration. It is pre-eminently a disease of the female sex, most usually associated with the period of puberty, or, at all events, with disturbance in the menstrual function. Cases are recorded as occurring among young children.

The predisposing factors seem to be deficient personal and public hygiene, poor food, and overwork, and those who have to do much stair-climbing.[†] On the other hand, girls surrounded by all the luxuries that wealth and refinement can provide are by no means exempt. In these cases the want of proper exercise and a healthy occupation, together with pernicious literature and sometimes masturbation, seem to be potent causes in producing the complete symptoms. Our own experience would lead us to believe that this is frequently a family idiosyncrasy. In some patients the neurotic element of the disorder is so marked and prominent that writers have sometimes regarded the disease throughout as a neurosis.

Symptoms.—The peculiar complexion and the symptoms of profound anæmia constitute the most prominent manifestations of the malady. The complexion is perhaps the most striking feature: its peculiar yellow-greenish tinge has caused the disease to be designated the "green sickness;" as in most (idiopathic) anæmic persons the subcutaneous fat is not diminished, so also do we find in this disorder that the contour of the body may be maintained, or in some cases there may be a superfluous deposit of fat. The digestion suffers early in the case; a depraved appetite is prone to be present; hysterical outbursts are by no means uncommon; the menses are deranged, and the anæmic condition is further evidenced by venous and cardiac murmurs, palpitation, and syncopal attacks or even coma; breathlessness is often a prominent symptom. In advanced cases the patients appear waxy, they are lethargic, listless or absent-minded.

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[*] Three years ago (1884), Professor Charles S. Poy communicated to an English physiological society a method of determining the specific gravity of the blood by the use of only a few drops of that liquid. In the *Journal of Physiology* (February, 1887), E. Lloyd Jones, of the Cambridge Pathological Laboratory (*New York Medical Journal*, April 9, 1887, p. 409), further elaborates the subject. His observations extend to three hundred and sixty-two persons of all ages and both sexes. The ingestion of food, particularly if accompanied by much water, causes a fall. If alcohol is used there is a rise; sleep will have the same effect. Gentle exercise causes a fall, but prolonged exercise accompanied by perspiration will cause it to rise.

[†] Osler, ibid.

Pathology.—The corpuscles are not reduced so much in number as they are in their contained amount of hæmoglobin. Investigations have definitely demonstrated the poverty of the separate corpuscles in hæmoglobin, a further change is noted in the varying size of the corpuscles. Large, giant red cells and microcytes are sometimes noted. The changes, however, are not as characteristic or as well marked as in idiopathic anæmia, but young, poorly-formed corpuscles, deficient in hæmoglobin, may be said to be the microscopic diagnostic feature of chlorosis. Hayem and Willcocks further add the fact that the average corpuscular diameter will be found to be lower than normal. The blood-serum is about normal in quality, except that the solids are slightly reduced in amount. As we have already stated when considering cardiac atrophy, Virchow has pointed out the fact that in chlorosis there may be a congenital deficiency in the size of the heart and the activity of the circulation: the heart and vessels may remain almost infantile in size. These alterations are not always present, nor are abnormities in the female sexual apparatus always present. Some, however, consider that these alterations in the heart and reproductive organs are the primary change which cause the blood-crasis. Others, however, do not grant this hypothesis, stating in rebuttal that children who have passed through an absolutely healthy childhood may develop chlorosis, and ultimately recover. These cases are within the experience of all clinicians.

The blood-making organs present no lesions that aid us in diagnosis.

Treatment.—Iron may here be considered almost a specific, hence some writers have endeavored to show that the etiology of the disease is to be sought in the gastro-intestinal tract, and that the failure of assimilating the traces of iron which are to be found in the every-day dietary, accounts for its absence in the corpuscles. Be this as it may, the fact remains that our main reliance is to be placed in iron. Osler has found Blaud's pill[*] the most efficacious, stating that under its use he has frequently noted a doubling of the number of the red corpuscles per cubic millimetre in a fortnight. Any preparation of iron that the practitioner may elect will prove beneficial. It does not make such a great difference which one is selected so long as a sufficient quantity is given.

The vegetable acids will often be of decided benefit. Indeed, one writer has gone so far as to say that the disease is due to an absence of hydrochloric acid in the gastric juice, considering that upon its presence depends the dissolving of the iron compounds of the food and their consequent assimilation by the tissues.

Diet and hygiene must receive careful attention and supervision.

PERNICIOUS ANÆMIA.[†]

This form of anæmia arises apparently idiopathically, at least we are unable to satisfactorily associate its origin with any definite and specific organic lesion.

Etiology.—We can no longer consider this as one of the rare diseases, as the current literature of the day contains many examples of pernicious anæmia; it is, on the whole, perhaps more frequent in Germany and Switzerland than it is in either England or America.

Those who are overworked, poorly nourished, and dwell among unhygienic surroundings, are on the whole most prone to the disease; this, however, does not always pertain, as, for instance, the disease is not at all frequent among the poorer classes of Ireland, who are notoriously ill fed and housed. Osler's Montreal cases were among the upper or higher mechanic classes.

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[*] ℞ Ferri sulph.,
Potass. carb. et tart., āā ℥ss;
Tragacanth., q. s.
M. et div. in pil. No. xcvi.

[†] Synonymes: *Perniziöse Anämie*, Quincke; *Progressive perniziöse Anämie*, Biermer; *Idiopathic anœmia*, Addison; *Essentielle Anämie*, Lebert; *Anémie progressive*, Lepine; *Essentielle Maligne*, or *Essentielle febrile Anämie*, Immermann; *anœmatosis*, Pepper.

Age.—It is undoubtedly a fact that the adult is more prone to the disease than the child; however, cases do occur among children, as in Pye-Smith's selected table of one hundred and three cases we find six below the age of fifteen. Recently Schapiro has recorded in the Russian journal *Vratch** a case in a boy thirteen years old, Quincke† in a child eleven years old, and Kjellberg‡ in a child of only five years, being the youngest case on record.

Sex.—Excluding, as we must in the present treatise, all cases occurring in the parturient female, pernicious anæmia is more frequent in the male than in the female.

As etiological factors may be mentioned chronic diarrhœa or discharges, ulcers, loss of blood, mental worry, or fright.§

Gastric and intestinal disorders have by many been considered a direct cause of the blood-changes. As early as 1860 Flint endeavored to show the possible relation between pernicious anæmia and degenerative disease of the gastric tubules. Fenwick‖ more recently reported cases in which the two conditions were associated, as have also Henry and Osler;¶ and still more recently Kinnicutt** reports three cases, in which he considers as proven that extensive destruction of the secretory structures of the stomach may be regarded as causal in a certain number of cases of pernicious anæmia.

Runeberg, in 1886, suggested that pernicious anæmia may sometimes be due to the presence in the intestine of a tapeworm (the bothriocephalus latus), and Schapiro†† has very

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* Med. and Surg. Rept., Nov. 12, 1887, p. 656.

† Am. J. Med. Sc., Jan. 1885, p. 258.

‡ Nordiskt Medicinskt Arkiv., Bd. xvi. Hft. 18, quoted in Am. J. Med. Sci., January, 1885, p. 253.

§ Curtin, Med. Times, Phil., April 4, 1885.

‖ Lancet, Lond., vol. ii., 1877.

¶ Am. J. Med. Sc., April, 1886.

** Ibid., October, 1887, p. 419.

†† Ibid.

recently recorded an instance of genuine pernicious anæmia in a boy of thirteen years, who made a fair recovery after the expulsion of a number of segments of the bothriocephalus.

After having considered all these causes, we will still find a large number of cases that appear to arise spontaneously, and to which we can but apply the term idiopathic; indeed, one of the most marked characteristics of the disease is its development without assignable cause,—many modern writers do not consider the disease idiopathic, or pernicious anæmia, if they are able to definitely determine its cause in a given case. It seems to us that its etiology is to be determined perhaps by a careful study of the chemico-vital changes—if we may be allowed the term—of the blood, and it is not to the pathologist and microscopist that we are to look for a solution of the problem, but rather to the laboratory of the chemist and the physiologist.

Symptoms.—The blood, when drawn, is about the color of a light claret; it flows slowly, and sometimes it is difficult to procure a drop; hydræmia is not marked, as the corpuscles appear to fill the drop completely.

Broadbent says that the blood in these cases will stain the finger like nitric acid; some compare it to muscle-washings or weak coffee. The blood remains uncoagulated for a long time; its specific gravity may be as low as 1.030.

Microscopic examination will reveal certain alterations in the blood-cells which are by many considered pathognomonic.

Red corpuscles.—*Size:* A great variation may be noted, some markedly increased, constituting the large, giant forms, or megalocytes; others are normal in size; and a third variety, or small, round cells, the microcytes, are deeper in color than the other varieties, which may even be paler than normal.

Shape: Alterations in form and shape are in this disease most characteristic, and, according to Osler, this irregularity is never met with to the same extent in other conditions. These irregularities of form may be various, so that they have lost all resemblance to the normal red disk; their biconcave form has been replaced by flat, oval, or tailed varieties, or they may be elongated and rod-like. This change in shape may not extend to the entire corpuscle, as one end may be normal while the other is pointed, tailed, or blunted. Balloon and reniform shapes have been noted.

But little tendency is shown by the corpuscles to form into well-marked rouleaux.

The large cells are often ovoid with sinuous margins. These changes in shape are believed by Mackern and Davy to be due to an abnormally soft stroma, by others to an altered state of the serum.

Nucleated red corpuscles are stated by Ehrlich to be present in all cases. Osler found them but in two cases, and then they were scanty.

Granular masses—Max Schultz's granule-masses—may or may not be present. Quincke and Leube have each recorded a case in which they were abundant. Osler could in some cases find but a trace of them, and in others they were less abundant than in health. These masses are composed of the hæmatoblasts or blood-plates; in cachexiæ and leukæmia they are sometimes very abundant. The white or colorless corpuscles may be increased relatively; usually, however, they are normal. In some cases they have been noted larger than normal, and somewhat less granular. Litten* has observed a case of pernicious anæmia pass into leukæmia. The amœboid movements were active in the cases observed by Osler, Pye-Smith, and Gardner.

After all, however, the most characteristic alteration in the blood is the great reduction in number of the red corpuscles. Considering the normal number per cubic millimetre to be five million, we may find under these circumstances but one million two hundred and fifty thousand, or even as few as five hundred thousand.† This reduction is even more extensive than that following a severe hemorrhage or the exhausting process of phthisis.

The reduction is not constant, but varies from time to time.

The hæmoglobin is markedly deficient, which accounts for the light and peculiar color of the blood; many believe that there is no proportion between the reduction of the corpuscles and their deficiency in hæmoglobin. Osler agrees with the statement of Laache, that the relative coloration of the corpuscles is increased. This seems as marked a feature in pernicious anæmia as the relative reduction is in chlorosis. From this fact we understand why the anæmia is never quite so intense as the number of corpuscles would appear to indicate.

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* Berlin. Klin. Wochenschrift, 1877.

† Quincke reports a reduction of red corpuscles to but one hundred and forty-three thousand per c.m.

Quinquand* states that there are one hundred and twenty-five grammes of hæmoglobin in one thousand granules of normal human blood, and considers that a reduction to 26.5 grammes, or one-fifth, would be invariably fatal.

General symptoms.—Again must the classical description of Addison be quoted: "It makes its approach in so slow and insidious a manner that the patient can hardly fix a date to the earliest feeling of that languor which is shortly to become so extreme. The countenance gets pale, the whites of the eyes become pearly, the general frame flabby rather than wasted, the pulse perhaps large, but remarkably soft and compressible, and occasionally with a slight jerk, especially under the slightest excitement. There is an increasing indisposition to exertion, with an uncomfortable feeling of faintness and breathlessness in attempting it; the heart is readily made to palpitate; the whole surface of the body presents a blanched, smooth, and waxy appearance; the lips, gums, and tongue seem bloodless; the flabbiness of the solids increases; the appetite fails; extreme languor and faintness supervene; breathlessness and palpitation are produced by the most trifling exertion or emotion; some slight œdema is probably perceived about the ankles; the debility becomes extreme; the patient can no longer rise from his bed; the mind occasionally wanders; he falls into a prostrate and half-torpid state, and at length expires; nevertheless, to the very last, and after a sickness of several months' duration, the bulkiness of the general frame and the amount of obesity often present a most striking contrast to the failure and exhaustion observable in every other respect."†

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* Compt. Rend., xxvii., No. 6, quoted by Musser, Reference Handbook Med. Sci.

† Monograph on Diseases of Supra-renal Capsules, p. 8; Osler, Amer. Syst. Med.

As we see, then, the symptoms of pernicious anæmia are simply, as Coupland remarks, those of simple anæmia aggravated and intensified.

The complexion of these cases assumes a peculiar tint which must be seen to be appreciated, variously styled as a light lemon tint, a straw-yellow, or a grayish-yellow, or it may even assume the hue of a mild icterus.

Slight œdema may or may not be present; it is usually apparent about the feet and legs during the latter part of the case; cutaneous hemorrhages may appear on the legs and arms; epistaxis is not uncommon, and melæna may arise.

Examination of the eye-ground may detect retinal hemorrhages, but these changes in the eye are not particularly characteristic, as they are not different from those found in other diseases, for example, in the secondary anæmias and in Bright's disease. Optic neuritis and œdema of the disk and retina have been noted.

A distinct basal hæmic or anæmic murmur may be present with the venous hum, or *bruit de diable*, in the veins of the neck.

These hæmic murmurs have a variable distribution; sometimes it is with difficulty that we can decide their points of maximum intensity; occasionally we could almost conclude that there was a murmur at each valvular orifice; at our next examination all abnormal sounds may have disappeared to reappear again to-morrow, or upon exertion or change of position, as from the recumbent to the erect or *vice versa*. All the visible arteries may pulsate, and auscultation may reveal a systolic arterial murmur.

The *pulse* is usually rapid, soft, and compressible.*

Derangement of the gastro-intestinal system is a prominent and almost ever-present cause of complaint, accompanied by nausea and vomiting with almost complete anorexia.

Fever may or may not be present; the urine is pale and acid; hæmaturia rarely occurs. Cerebral symptoms are sometimes prominent.

Prognosis.—This is essentially unfavorable, most cases pursuing a progressively downward course, to terminate, after a lapse of, at the most, two to three years, in death, usually by asthenia; however, undoubted evidences are presented by writers of cases of recovery from this disease.

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* Henry, 100 to 120; Osler, 80 to 100 or more.

Diagnosis.—We consider anæmia pernicious when the corpuscles have been reduced below two million per cubic millimetre, and present the alterations in size and shape that we have already described. The percentage of hæmoglobin is not reduced, or it even may be above normal. The blood presents *megalocytes* (large red corpuscles), *microcytes* (below the normal size), and *poikilocytes* (distorted cells).

Post-mortem appearances.—The blood-changes have already been described.

The heart is flabby, and has usually undergone fatty degeneration; normal hearts have, however, been recorded; the interior of the blood-vessels has undergone similar change. The gastric membrane is much affected (see *etiology*). The spleen is usually normal, as are the lymph-glands; nucleated red corpuscles have been noted in the spleen and lymph-glands.

The fatty tissue of the long bones may be replaced by a red marrow resembling the osseous system of the infant. These changes, however, are not peculiar to pernicious anæmia, and, as Henry states, are not primary. The sympathetic system is by some considered normal; others have remarked a fatty change, and an increase in the insterstitial tissues with pigmentation of the cells has been recorded.

Several instances of decrease in size of the supra-renals have been noticed.

Treatment.—Arsenic is undoubtedly our main reliance in combating this almost hopeless malady. Full and increasing doses of Fowler's solution may be administered with occasionally a favorable result. Iron is of secondary importance; in this disease it has seemingly lost its almost specific powers, which are so well shown in cases of secondary anæmia or in chlorosis.

Transfusion of blood or milk may be tried. Inhalation of oxygen has been recommended, but medicinal or therapeutic measures should be assisted to their utmost by careful hygienic and dietetic regulations.

LEUKÆMIA.*

An increased number of colorless corpuscles, associated with enlargement of the spleen, lymph-elements, and bone-marrow, constitutes an example of the disease leukæmia.

Changes in the hæmatopoëtic organs have caused writers to describe the disease under three headings, according as one or the other organ was affected, as splenic, lymphatic, and medullary or myelogenous leukæmia. Rarely, however, is but one of the organs affected alone; most often is the spleen affected, and with it the bone-marrow. Cases are recorded in which the thymus and thyroid bodies were affected, and others in which the tonsils and intestinal glands first presented abnormalities, and Kaposi† reports a case in which the lymphatic elements of the skin were first involved.

Etiology.—Age: The disease occurs at all ages. Trousseau and Mosler have recorded cases at fifteen and sixteen months, Osler one in a suckling of eight months, Goodhart, six cases under two years, and one of us in a child of four and a half years.‡

Sex.—Males are undoubtedly more liable to the disease than females.

Prolonged exposure to cold is said to be an exciting cause. Poverty, with all its attendant ills and worries, presents many predisposing factors. The hemorrhagic diathesis appears sometimes as a cause, notably in Howard's§ case of a boy whose mother and sister were bleeders, he having also suffered much from nose-bleed when a young child. Traumatism of the spleen and bones has been accorded a place in the etiology. Syphilis and malaria have also been attributed predisposing and exciting powers.

Symptoms.—The blood: As the blood is removed from the finger it is reddish-gray or brown, pale-red, grayish-red, or chocolate-brown ("milch chocolade"), according as it appears to the eyes of the various observers.

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* Synonymes: *Leucocythemia*, Bennett, Henry.

† Wiener Med. Jährbucher, 1885; Osler, ibid.

‡ Medical News, November 21, 1885.

§ Montreal General Hospital Reports, vol. i., 1880.

Great increase in the number of colorless corpuscles is at once apparent, until they may bear the proportion to red of one to twenty, or one to ten, or one to four. Rarely does it go below this, although it has been reported as low as one to two.*

The corpuscles are no longer the normal white cells, but they vary much in size. Their amœboid movements are slow and sluggish. Some of the cells bear a close resemblance to the marrow-cells, and Damon† has observed in the blood of a boy suffering from leukæmia certain crystals different from any before observed, to which he gave the name "Leucocrystallin;" the crystals seen in the sputum of asthmatic cases, so widely known as Lyden's‡ crystals, have also been observed in the blood of these patients.

The red corpuscles are but little affected. Microcytes and large corpuscles sometimes occur, but we do not see the many characteristic alterations that occur in pernicious anæmia.

General symptoms.—Insidious in onset, the disease rarely comes under our observation until the lesions are well advanced, the spleen enlarged, and the abdomen prominent, when we will probably note extreme shortness of breath, marked pallor, and possibly œdematous extremities; the patient will complain of dragging in the side, dizziness, and possibly nose-bleed, or, as in the boy reported by Howard, a sudden and fatal hæmatemesis, the same observer reporting the case of a girl in whom severe hemorrhage from the stomach was an early and an alarming symptom; in fact, gastric symptoms are rarely absent, not always, however, of such an alarming character as those just referred to. Diarrhœa is an almost invariable concomitant; melæna may occur.

The spleen particularly, and possibly the lymphatic glands, are enlarged, the liver may be and is most usually towards the close of the disease; ascites is usually present to a greater or less degree; it may either be due to pressure from the enlarged abdominal organs or to a general hydræmic condition of the blood. The profound anæmia may cause dizziness, syncope, and possibly a mild delirium; headache is sometimes complained of. Osler has never noticed that the cases were sad or morose, as stated by some writers on the subject.

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* Osler.

† Boylston Prize Essay on Leucocythæmia, 1864; Henry, ibid.

‡ Sometimes styled Charcot's crystals.

Hyperpyrexia is present at some time during the history of the case. The eye presents some alterations in the retina; hemorrhages even may occur; these hemorrhages are peculiar in that they are made up principally of white corpuscles, which on ophthalmoscopic examination present a yellowish-white color.

The præcordial region will usually reveal, on auscultation, hæmic murmurs which are so often heard in anæmic conditions; the pulse is quick, soft, and compressible.

The spleen.—Pain and distress in the splenic region is very often present; the organ may be markedly enlarged and occupy the larger portion of the abdominal cavity or even the pelvic; pressure from the spleen may cause interference in the venous return, or it may even cause intestinal obstruction; a murmur has been heard in the spleen, and Gerhardt has known one to pulsate.

The *lymph-glands* are not affected to the same extent as in Hodgkin's disease, nor do we often note them as causing severe pressure-symptoms. As the gland increases in size there may be local tenderness or pain; the case which we have reported (*ibid.*) presented marked enlargement and induration of the cervical glands. Perhaps on the whole lymphatic leukæmia is more frequent in children than in adults.

The *course of the disease* is usually slow and chronic; however, in children it is apt to be very rapid. Fortunately, this acute leukæmia is happily very rare; most cases succumb to a gradual asthenia; a sudden, fatal hemorrhage may arise at any time.

Treatment.—In the early stages, before profound alterations have occurred in the spleen or lymph-glands, and while the leucocytosis is but moderate in degree, some prospects of a cure may be entertained; later, however, we must disabuse our minds of such comforting thoughts and consider that the most we can do is to simply palliate symptoms.

Iron, arsenic, and quinine are, perhaps, the drugs from which we will derive the most satisfactory results; they must, however, be administered in full doses and be continued for several months; improvement will sometimes occur totally independent of any and all form of treatment.

The symptoms to which we have called attention require their appropriate symptomatic treatment as they arise.

HODGKIN'S DISEASE.*

The majority of the cases of this disease occur among the young. Its characteristics are anæmia and hyperplasia of the lymph-glands, with secondary lymphatic growth in other parts of the body.

A proportionately larger number of males are affected in this disease than we noted in leukæmia; an hereditary predisposition has been claimed for the disease, and syphilis, bad food, exposure of all kinds, and local lymphatic irritation have been looked upon as predisposing factors.

The blood.—There is, of course, anæmia present, but the red corpuscles are not reduced in number to the same extent as in pernicious anæmia; they are usually uniform in size; nor does poikilocytosis exist to any marked extent; numerous microcytes have been noted in a few instances. Osler has not seen the nucleated corpuscle in any of his cases.

The white corpuscles are not very much increased, although a fair amount of leucocytosis may be present. Schultze's granules are present.

General symptoms.—The earliest symptoms are usually referable to the lymphatic glands, which in their incipiency present a painless enlargement, usually attracting the patient's attention more by their inconvenience than by actual pain. The cervical glands are generally first affected, then the axillary. Should the bronchial or mesenteric glands be first affected, and produce mechanical interference with the functions of the organism, great difficulty in correctly interpreting the case may arise. Writers mention examples of this disease in which the early symptoms were marked dyspnœa, œdema of the extremities, thoracic pains, or even in one case paraplegia.

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* Synonymes: *pseudo-leukæmia*, *adenoid disease*, *anæmia lymphatica*, and many others.

The anæmia seems to increase in proportion to the glandular hypertrophy. Hemorrhage is not so liable to occur as in leukæmia. The heart and circulation present the ordinary symptoms and murmurs depending upon anæmia, and are usually in proportion to its severity; these symptoms may be further increased by pressure of the glands upon the nerves.

In this disease fever is a marked and prominent symptom. Osler considers that an irregular hectic type, with morning remissions, is the most common; he has, however, noted ague-like paroxysms, with rigors, a hot and a sweating stage. During the height of the fever the glands may become much swollen. Respiratory symptoms of two varieties arise,—those dependent upon the anæmia, as breathlessness, and those depending upon pressure from the enlarged glands; even pleuritic effusion has thus been caused (Osler), due to pressure on the azygos and intercostal veins.

Dyspepsia, dysphagia, gastro-intestinal troubles, constipation, enlargement of the liver and spleen, jaundice, and ascites may all arise; the nervous system and the special senses become deranged; albumen may be present in the urine.

Prognosis.—This depends much upon the situation of the lymphatic enlargement and the rapidity with which it takes place. The disease may either prove rapidly fatal in from two to four months or it may extend over a period of years, death eventually taking place from asthenia; death may occur, however, at any time from pressure on the vital structures by the enlarged glands.

Treatment.—As we would expect from our experience in other blood-diseases, arsenic is of much benefit; it must, however, be given in full doses until its early toxic effects are noticeable, when the dose may be reduced but not discontinued. Under this plan of treatment we will occasionally have the satisfaction of seeing the glands become smaller and smaller; but rarely, however, will we meet with a complete recovery. Phosphorus, iron, quinine, cod-liver oil, and general tonics may be exhibited; local frictions or inunctions to the enlarged glands have but little if any effect; substances injected into these glands do not seem to have any appreciable effect.

If the glands are small, isolated, and accessible, they may be removed. Tracheotomy is sometimes demanded for occlusion of the glottis or trachea.

HÆMOPHILIA.*

This is peculiarly a congenital or hereditary abnormality, whose full recognition and accurate description is due to the acumen of American physicians. While most cases present undoubted evidences of heredity, still the disease may arise in a child whose ancestors present not a trace of the disorder. Most of these children succumb to the disease; some, however, have lived, and in turn procreated bleeders.† Males are more prone to be affected than females.

Osler‡ presents many cases, and an interesting family genealogy showing the strong hereditary tendency of the disease.

Age.—Grandidier§ has shown that the large proportion of cases occur from the first year to the end of the second year; rarely does the first bleeding occur after the twelfth year, and in only one case has it occurred after the fifteenth year. Bleeders are seen under all conditions of life, although climate seems to have some effect in determining the disease; most cases are seen in cold, damp localities, still warm, equable climates present a few illustrations of hæmophilia. Families who are the subject of this disease are apt to be very prolific.

Symptoms.—Marked symptoms appear during the early years of life; in fact, the condition is usually well established before the fifth year.

Osler agrees with Legg and Grandidier in that the symptoms may be grouped under three divisions: external bleedings, spontaneous and traumatic; interstitial bleedings, petechiæ, and ecchymoses; and the joint-affections. The latter observer cites the following localities which were affected in the order named: epistaxis; from the mouth, stomach, bowels, urethra, lungs, skin of head, tongue and finger-tips, tear-papilla, female generative organs, external ear, cerebral hemorrhage, navel (long healed). A case is also recorded in which a child bled to death from the scrotum.

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* Synonymes: *Hereditary hemorrhage, hemorrhagic diathesis, hæmatophilia, Blutterkrankheit, idiosyncrasia hemorrhagica.*

† Bleeder is the term applied to one who is the subject of hæmophilia.

‡ Ibid., p. 933.

§ Die Hämophilie, Leipzig, Zweite Auflage, 1877.

Severe and even fatal hemorrhage may result from traumatism or from the most trivial operations, as, for instance, the extraction of a tooth, leeching, blister, or vaccination. The bleeding in these cases is always simply a capillary oozing, which may last for hours, days, or weeks.

The interstitial hemorrhages—hæmatoma, petechiæ, etc.—may either arise spontaneously or be the result of trauma; the extremities are usually affected, less commonly the mucous and serous membranes.

Joint-affections are commonly met with; they may present simply slight pain or intense inflammation and redness, resembling rheumatism. The large joints are generally affected, particularly the knees.

Treatment.—When hemorrhage occurs the ordinary means for its arrest must be tried, both locally and internally; ergot and iron have been of service.

During the absence of bleeding all our measures should be directed to prevent its recurrence; the patients must be guarded against trauma or the most trivial operations; teeth should not be extracted. Females of a bleeder family should not be allowed marriage, as some of their male children will inevitably be affected. A suitable warm and equable climate should be selected for winter residence.

THROMBOSIS AND EMBOLISM.

The two great generators of blood-clots—the paraglobulin is contained mainly in the white corpuscles and the fibrinogenous material found in solution in the plasma—uniting are acted upon by a fibrin ferment, possibly contained in the white corpuscles, and cause clotting, or the formation of fibrin, to take place; but this requires another element, in many cases equally important,—namely, an abnormal condition of the endothelium of the blood-vessels. According to Weigert the death of the white corpuscle is essential, and according to the experiments of others the destruction of the red corpuscle is equally important. Indeed, the investigations of Virchow have shown that the disease of the blood-vessel is not essential in the formation of a clot; in all probability destruction of the blood-cells with stagnation of the circulation are to be looked upon as the essential elements. This probably accounts for the fact that we see so many very diseased hearts capable of sustaining life and permitting blood which is healthy to pass through them, and again heart-clots, or infarcta, forming in acute disease in childhood when the endothelium is normal but when stagnation has taken place in the circulation and the blood itself disorganized.

What is understood as thrombosis is a clot formed in a vessel and remaining *in situ*. When it becomes detached and enters the current it becomes an embolus, though under the latter definition would come any foreign body that is carried through the circulation. Of course the effects of such plugging of the vessels or stoppage of circulation are purely mechanical, but infectious emboli may carry disease to distant parts of the body.

In children's practice the question of thrombosis and embolism becomes an extremely interesting and important one; we find embolism resulting from thrombosis in the peripheral veins, such as the renal, the umbilical, the diploic, but more especially of the veins in the more dependent part of the body, as the femoral, the internal saphena, or the cerebral sinus, and lateral sinuses, owing to the tendency of clot-formation, on account of the *vis a tergo* and thoracic aspiration, but we may also have autochthonous clots in the pulmonary artery from pressure of enlarged glands of the neck or bronchial glands. We may also have clots formed from stasis of the circulation due to mitral disease of long standing.

Thrombosis may occur also in diseases of the cytogenetic organs, as in lymphadenoma, leucothythæmia, and we may also have it in typhoid fever, diphtheria, pyæmia, and certain surgical cases; indeed, in all forms of febrile disease where great destruction of corpuscles has taken place blood-clotting is imminent, and the seat of the thrombus will be mainly dependent upon local causes. The lodging of an embolus, whether venous or arterial, will be purely a matter of accident. Venous emboli may be carried from any of the venous trunks into the right heart and lodged in the pulmonary artery or in its ramifications; the symptomatology will be mainly dependent upon the mechanical obstruction caused by this.

The division made by Beverley Robinson is eminently correct,—into the sudden fatal, the grave, the benign. In the first form the main trunk or both divisions are suddenly obstructed. Respiration becomes rapid, and exaggerated attempts are made at breathing. There is no obstruction to the entrance of air, but the fault lies with the supply of venous blood, which cannot reach the radicles of the pulmonary artery, and the current is dammed back upon the right heart and venous system. There is intense dyspnœa, pallor of face, rapid and irregular heart-action; there is difficult oxygenation, and death is the result of asphyxia. But where the embolus is lodged in the right heart, sudden stoppage to the circulation may take place and a fatal syncope result.

In the second form the secondary division of the pulmonary artery is plugged, the same series of symptoms, still with the suddenness, take place. We have the gasping respiration, deep and frequent, absence of all evidence of pulmonary disease, no dulness on percussion, no râles, but a rough respiratory murmur; there may be a venous pulse through tricuspid regurgitation; there is gradual cyanosis. Death gradually occurs, and probably preceding it, sanguinolent sputa, and local physical signs of infarcta exist. Some suppose that if the branches of the pulmonary artery are only partially plugged, permitting the current of blood to surround the embolus, reabsorption may take place.

In the third division minute infarcta occur in the minor ramifications of the pulmonary artery. These are apt to be carried to the right and left lungs, into the median and lower lobes, and as these emboli soften in the centre and disintegrate, they may be absorbed, and few symptoms may be the result. When these radicals of the pulmonary artery are obstructed no collateral circulation can be carried on through the bronchial artery, as the circulation between the two is absolutely independent; the bronchial arteries are those of nutrition; the pulmonary artery keeps up the function of the lung.

Of course it is readily recognized that some forms of pulmonary embolism, depending greatly at which point the embolus lodges, may give rise to pulmonary consolidation, or extension to the pleura may take place, with effusion or plastic deposit, which may be either unilateral or bilateral.

The importance of emboli as carriers of septic matters should always be recognized; in this way tubercular infection may be carried, or hydatids in embryo may be localized in the pulmonary tissue.* From what we have seen, pulmonary thrombosis is by no means a rare occurrence, and the only means of differential diagnosis betweeen pulmonary embolism and thrombosis during life are the suddenness of the symptoms in the former case, with the pre-existence of disease, to which could be attributed the formation of a thrombus, and in the latter case to the evidence of a more gradual plugging of the pulmonary artery.

CARDIAC THROMBOSIS.

Blood-clotting, which may fill the heart with coagula, is brought about by so many causes that naturally it has led to much discussion in medical literature. The same condition that will produce clots elsewhere will have more or less tendency to cause a coagulum to form in the cavity of the heart, independent of any lesion affecting the endocardium itself. The anatomical arrangement of the cardiac cavity is such as to intercept the column of blood which flows through it. An embolus carried from a distant venous trunk and lodged in the reticulated surface of the cavity of the right heart will often become a predisposing cause to thrombosis, as much so as would a roughened endocardium or diseased blood checked in its course by cardiac weakness; the slow precipitation of coagula is by no means uncommon in the febrile affections of childhood, and especially those diseases which are accompanied by disorganization of blood, with increase in the fibrogenetic elements and corpuscular death. The appearance of such a clot, whitened by the precipitation of its fibrin and the washing out of its coloring-matter, its close adherence to the papillary muscles, its firm seat in the net-work, and the prolongation of its tendrils in the direction of the blood-current, has given rise to the theory of a polypoid degeneration, the formation of concretions due to inflammation of the lining membrane of the heart.

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* An extremely interesting case has just occurred in Dr. Osler's wards in the University Hospital. A boy, ætat. 18, with mitral disease and its many concomitants, presented on the post-mortem table a pneumothorax of peculiar origin. A hemorrhagic infarct had ruptured through the periphery of the lung and torn through the visceral pleura, forming a lung fistula and greatly distending the pleural sac with air.

To Virchow, who followed in the footsteps of Van Sweeten, we are indebted for a clear understanding of the causation of infarcta, which may have formed in any part of the circulation, either arterial or venous, carried into the venous or arterial trunks through the heart, and lodged in the narrower vessels of the arterial or venous system. But we also know that the same result will follow a clot formed in the heart itself; through detachment of a calcareous valve, dilatation of the heart, pericarditis, roughened walls, a similar result may be brought about; but it requires more than this simple slowing of the circulation. Disease of the heart itself will not always produce cardiac thrombosis; a change must occur in the character of the blood itself to bring this about. This latter has been termed the vital or pathological cause, and is not dependent entirely upon the death-agony. In proof of this we have the statements of Harley in the early febrile stage of scarlet fever. We find it in certain inflammatory diseases, we have noted it ourselves frequently in measles, and it is one of the causes of early death in diphtheria. In rheumatism, of course, we have, as a frequent complication, endocarditis, which aids in its formation by adding a roughened endocardium.

The *symptoms* depend greatly upon the rapidity of formation, also naturally upon the size of the clot. They are usually brought about by the presence of the foreign body within the cardiac cavity and the obstruction to the circulation. They are more or less dependent upon the strain thrown upon the heart, and are frequently greatly exaggerated by excitement, by the febrile condition, sudden movements, or displacements of the heart by pressure from existing pericarditis, or large amounts of gas in the stomach. When they occur in the right heart, as they most usually do, the sounds in the left heart are unchanged, while those of the right become distant and muffled.

Some authors note a soft or possibly a rough and harsh bruit in the præcordial region, which may be transmitted into the aorta, with a doubling of the first sound; but this, indeed, is a difficult matter upon which to base a diagnosis. We should take into consideration the irregularity and intermittency of the cardiac action,—the word tumultuous seems to describe it better. In connection with abnormal heart-sounds, the rapidity of onset, a modification of the normal sounds by which they become muffled and indistinct, all complicating some disease, which we recognize as predisposing to cardiac thrombi, are sufficient for a diagnosis. Should the right heart become engorged, as it naturally will do, percussion-dulness will be marked over an extended area. There will be turgescence in the venous trunks, hyper-resonant pulmonary percussion, and the symptoms before noted, showing the plugging of the pulmonary artery. There would be a sudden and marked asphyxia in the first instance, and a more gradual evidence of venous stasis in the latter.

To those who have witnessed at the bedside the sudden plugging of the pulmonary artery, with its frightful consequences, no description is necessary to aid them in forming a diagnosis. The same sequence of symptoms, dispossessed to a certain extent of the horrors of suddenness of onset, will follow the formation of a cardiac thrombus as a complication of acute disease.

Prognosis.—The question is often asked after a cardiac thrombus has formed, Can reabsorption take place? and though it seems almost impossible theoretically that such a fortunate result can be attained, reports of cases prove that occasionally a clot has formed sufficiently large to produce a series of symptoms that make the diagnosis positive. Post-mortem examinations and clinical experience have shown that small clots out of the way of the direct circulation may exist without marked disturbance, and concretions form and absorption take place, or disintegration result in emboli which may cause pyæmic symptoms or disturbances in distant organs. Of course we must bear in mind the distinction between the cadaveric clot, those occurring during the death-agony, and those that are ante-mortem; to the latter we have called especial attention. As a complication of acute disease of childhood the question of heart-clots becomes a matter of importance. Attention has been called to it* by one of us in diphtheria, scarlet fever, and measles, and at that time the thrombus was attributed to an increase in fibrin due to the rapid tissue-change, the importance of pushing an alkaline treatment from the start was urged, and again in reporting the death of a number of cases of malignant measles.† The mode of death was peculiar. The fatal signs came on suddenly and with frightful intensity: the gasping breathing, the frantic efforts to obtain air, the imploring look, with consciousness not impaired but seemingly unduly acute, until the final convulsion or gradual cyanosis brought the end.

The turgid veins, venous engorgement, the feeble pulse, the fluttering heart, pointed unmistakably to but one cause,—the gradual-forming right-sided heart-clot; and the post-mortem appearances as demonstrated at the section gave us a large, tough, chicken-fat clot obstructing the venous circulation, firmly planted in the right heart and its tributaries, too often exhibited to be disputed. One of the earliest symptoms of this impending danger was undue rapidity of respiration. The child seemed to be doing well, but its eruption irregular, probably incomplete, or dark and mottled and in blotches, when attention would be called to the great rapidity of respiration, with a peculiar, gasping inspiration, fish-like in character. The other fatal symptoms would follow rapidly, and within twelve hours the child, despite carbonate of ammonia, warm baths, digitalis, etc., would die of heart-clot.‡ In some cases pneumonia was absent; where it existed the fatal issue might have been brought about by stasis in the circulation. The immense number of micrococci found in the blood was looked upon as a possible cause in the determination of the clot; but the fact remains the same, whether we adopt this view or not, that in all of the diseases of childhood that are accompanied by a febrile state with blood-disorganization, where the pathological and mechanical elements are combined, cardiac thrombosis of the left heart deserves serious consideration.

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* Journal of American Sciences, January, 1882.

† Philadelphia Medical Times, August 12, 1882.

‡ The blood-clotting and manner of closure of the ductus arteriosus and hypogastric artery is fully described and illustrated by J. Collins Warren, "The Healing of Arteries," etc. New York: William Wood & Co., 1886, pp. 111–137.

NOTE.—For a full historical account of this important accident we are obliged to refer, for want of space, to the excellent article of Beverley Robinson, in "System of Medicine by American Authors."

CLINICAL NOTES FROM HOSPITAL AND DISPENSARY PRACTICE.

BY L. EMMETT HOLT, A.M., M.D.,

Attending Physician to the New York Infant Asylum and to the Northwestern Dispensary, Children's Department.

CASE I. *Infantile convulsions treated by oxygen and the cold pack.*—A. C. was a seven months' child, whose mother's sufferings were great during her pregnancy from a brutal, drunken husband. The child was admitted in October, when ten months old, to the Infant Asylum, weighing fifteen pounds. It was small and weakly, and suffering at the time from slight bronchitis. This subsided shortly after admission, and, except that it was a very nervous infant, nothing unusual was observed till November 7, when it became extremely restless, rolled its eyes about wildly, clinched its hands, and uttered sharp, sudden cries. Cold was applied to the head, the feet were put into a hot mustard-bath, and three grains of sodium bromide given hourly.

These measures were without effect; the symptoms increased in severity, and at 4 P.M. the child was seized with general convulsions. The temperature had now risen to 103.6°. He was put immediately into a hot mustard-bath, but grew worse rather than better, became extremely cyanotic, almost pulseless, and when removed from the bath was thought to be dying. The pupils were dilated and the conjunctiva injected. He was now rolled in blankets and the administration of oxygen begun, with cold to his head and five drops of brandy given every few minutes. At 4.45 P.M. the cyanosis had diminished very much under the use of the oxygen, but the convulsions continued, and the temperature had risen to 104.8°.

Cold packs were now applied to the entire body, and changed as soon as warm, the oxygen being continued. The temperature fell as follows: 4.45 P.M., 104.8°; 5.30 P.M., 104°; 5.45 P.M., 103°; 6.15 P.M., 101.4°; 6.35 P.M., 100°.

The packs were discontinued after 6.15 P.M. As the temperature fell the spasms ceased, and at 6.45 P.M. the child was asleep.

The oxygen was continued for five minutes every hour during the night, and brandy and sodium bromide were administered.

At ten o'clock the temperature rose to 102°; fell, however, shortly, under cold sponging. Cold was kept applied to the head.

At 11 A.M. the next day the temperature had again risen to 104°, and all the premonitory symptoms of convulsions were present. Oxygen and cold packs were repeated as on the day before, with the same gratifying results. The temperature was quickly brought down to 99.6°. The cyanosis was not so great as on the evening before, but the heart's action became very feeble at any attempted withdrawal of the oxygen.

A tolerably quiet day was passed, but at 6 P.M. there was another severe attack of convulsions. The same treatment was instituted as before, except that cold sponging was substituted for the pack. In half an hour the temperature fell from 103° to 101°, and the child was soon asleep.

Cold to the head was continued and oxygen administered at short intervals through the night, and at longer ones for the next four days. The temperature did not again go above 100°, and the convulsions did not recur.

On the morning following the last convulsion an examination of the lungs revealed, over the left upper lobe behind, the respiratory murmur very greatly diminished, almost absent, with slight dulness, but no râles. These signs were interpreted to mean collapse of this part of the lung.

The only assignable cause for the convulsive attacks was the cutting of the first teeth, which were coming through at that time. This view is favored by the subsequent history of the case. At each eruption of teeth there were present marked restlessness and signs of cerebral irritation, such as clinching of the hands, rolling about of the head, constant moaning, etc.; but the use of cold to the head in the form of an ice-cap always gave great relief, and no further convulsions occurred.

The child improved very much in general condition after this time, but died the May following, of what disease I was unable to learn.

Remarks.—The use of oxygen in infantile convulsions is not new, and others have borne witness to its value. In private practice, unfortunately, it cannot often be obtained in the emergencies where it would be of greatest utility. In the case related the heart's action was so feeble that the use of chloral per rectum, so generally efficacious, seemed inadmissible. I doubt very much whether anything would have been so efficient as the oxygen.

With such symptoms as general cyanosis and venous congestion of the brain, with fast failing heart and respiration, what therapeutic measure more rational than the use of oxygen? Any one who has seen the change which a few minutes makes in these patients where oxygen is used, cannot fail to have been impressed with its great superiority to every other stimulant we possess.

It is used almost daily at the Asylum in the sinking spells of broncho-pneumonia and severe bronchitis, in the collapse of cholera infantum, and many other diseases besides convulsions, with equally satisfactory results.

The use of the cold pack in a delicate child, who was cyanotic and almost pulseless, would seem *a priori* a very dangerous expedient, and but for the disastrous symptoms which followed the hot mustard-bath it would not have been resorted to.

Without the simultaneous use of the oxygen the cold packs might have been too depressing. The result was obtained by the happy action in combination of the two agents.

CASE II. *Malarial fever simulating meningitis.*—A stout boy, thirteen years old, was first seen September 2. The history given was that he had been as well as usual until two days before, since which time he had complained of constant severe headache, had vomited several times, was constipated until a saline cathartic was administered, and fever had kept up without intermission. The symptoms were severe enough to confine the patient to his bed. Slight delirium was noticed, and he had once passed his fæces in bed.

I found him with a flushed face, heavily-coated tongue, temperature 102° F., pulse 88, respiration 24. Pulse and respiration both regular. The abdomen was slightly retracted; pupils regular, and respond to light; no paralysis. Careful exploration of the thoracic and abdominal viscera was absolutely negative, except that the spleen was a little enlarged.

The next day, the fourth of the illness, his temperature was 101½°, pulse 90, respiration 28; the vomiting had been controlled, but otherwise there was no essential change in the symptoms. His mind wandered much of the time. A positive diagnosis of meningitis was now made, it having been strongly suspected at the previous examination.

On the fifth day, temperature 102°, pulse 90. He was reported to have been wildly delirious the night before, but when visited he was quiet, natural, and said his headache was gone. He had a little cough, but, as on previous occasions, physical examination was negative, except as regards the spleen. It was decided to try quinine to exclude any possible malarial element there might be in the case. I had been unable to have a full temperature record kept, but there was nothing of periodicity in the other symptoms, so far as I could make out.

Sixth day: By some mistake the quinine was not given; temperature 103°, but the other symptoms rather better; head a little clearer, no vomiting, bowels moved by medicine. Treatment so far had been only symptomatic. He took an equivalent of twenty grains of quinine a day for the two following days. At the end of that time his temperature was normal, he was dressed and about the house, appetite returning, and all signs of convalescence present. His cerebral symptoms were gone entirely, and only a tendency to constipation remained. The quinine was continued, and the case made a very rapid recovery.

Remarks.—Cases like the above, where we can study the effects of the localization of a poison like malaria upon the nervous centres, are always of clinical interest, not so much from their rarity as from the difficulties in diagnosis which they present. A sudden illness, beginning with repeated attacks of vomiting, intense headache, fever, constipation, and later delirium, would lead almost any physician, when he had excluded the exanthemata, especially scarlatina, to make a diagnosis of meningitis. If not by these, then by what symptoms are we to recognize meningitis? An accurate temperature record for forty-eight hours would undoubtedly have revealed periodicity in the febrile movement. This point established, taken with enlargement of the spleen, ought to lead one to suspect malaria, no matter what the other symptoms might be, particularly if he were dealing with a patient known to have been exposed to malarial poisoning. This was the case with the patient whose history is given.

Prompt and permanent control of the fever, and, in fact, of all the symptoms, by quinine furnishes, to my mind, conclusive evidence that the patient was suffering from malarial poisoning. Under other circumstances the effect of the drug would rather be to aggravate the cerebral symptoms. Making a diagnosis by the effect of a therapeutic agent is, perhaps, not very scientific, but I am more and more strongly convinced that it is valuable and necessary, and that it will generally, but not always, lead us aright. It is unnecessary to say that in such instances full doses must be given, and so distributed as to give the largest dose three or four hours before the paroxysms are expected, otherwise we can hardly be said to put the drug to a test.

CASE III. *Chronic hydrocephalus; pachymeningitis; hemorrhagica; death; autopsy.*—W. M., male, came under my observation when thirteen months old, although he had been in the Infant Asylum for a year before that time. He was an illegitimate child of a delicate mother, who had vainly tried to bring on abortion by drugs. The child showed no signs of syphilis, and was in pretty good condition until three months old, when enlargement of the head first was noticed. This increased slowly but steadily from that time. He made no attempt to walk nor even to stand alone. He could not even hold the head up. He was backward in development in every respect, but never suffered from convulsions, nor were other decided cerebral symptoms present. About a month before his death, in midsummer, he was attacked with diarrhœa and vomiting, which was not severe and seemed only an ordinary gastro-enteritis. It was associated with an unusual amount of general prostration for degree of the gastric and intestinal symptoms. He wasted rapidly until he was literally skin and bones. For nearly two weeks it did not seem that he could live from one day to another. The extremities were cold, the lips cyanotic, the temperature much of the time subnormal, and on two or three occasions only 95.2° in the rectum. From these symptoms he could always be temporarily rallied by the use of oxygen.

The enlargement of the head was only moderate; there could be made out no actual paralysis; the pupils were equal but contracted; slight rigidity of the posterior cervical muscles existed, but no retraction of the abdomen. Five or six days before death he became gradually comatose, and remained in that condition. The only rise in his temperature, 102.5°, was noted half an hour before death. Death took place quietly, from exhaustion, with no convulsions. Some diarrhœa kept up till the last, but there was no vomiting worth mentioning during the last ten days.

Autopsy, forty-two hours after death. Body very small and greatly emaciated.

Head: fontanelles large, ossification of the cranium having scarcely advanced since birth; dura firmly adherent to the brain over the whole convexity; the brain-substance broke down in trying to separate them. There had been chronic pachymeningitis interna over the whole brain, very marked at the convexity, only slightly so at the base. It was much more severe upon the left side than on the right. A tough, parchment-like membrane could be peeled off from the dura on the right side. On the left the false membrane was thicker, and contained between its layers a broad, thin clot, composed of about an ounce of extravasated blood, slightly decolorized. There was nowhere present any pus or signs of recent acute meningitis. The lateral ventricles were much dilated, containing together, it was estimated, one pint of fluid, which was a clear serum. Ependyma slightly congested, but not thickened or granular. Brain-substance about one inch thick, forming the outer ventricular walls. All the cavities within the brain were dilated and contained fluid. The dilatation did not extend to the central canal of the cord. The brain-tissue itself was quite healthy in appearance.

The other organs presented nothing of especial interest.

The heart was normal, the lungs showed evidences of recent bronchitis, and some vesicular emphysema; there was swelling of Peyer's patches and of the mucous membrane and follicles of the large intestines; spleen nearly twice its usual size and somewhat adherent to adjacent organs; cloudy swelling of the cortex of the kidneys and a few minute uric acid calculi in the calices of the organ on each side; liver pale, slightly adherent to the diaphragm from perihepatitis. No tubercles were seen in any of the organs.

Remarks.—The symptoms and course of this case, so far as the hydrocephalus was concerned, showed nothing out of the ordinary line. This was amply sufficient to explain the cerebral symptoms, so that the finding at the autopsy of another lesion, and one so extensive, was a great surprise. No focal symptoms, such as paralysis, localized convulsions, etc., were noted at any time. These would probably have been produced if the meningeal hemorrhage had occurred rapidly. The fact that it was spread over such a large area in a thin layer is more consonant with a slow extravasation, and this also better accords with the symptoms.

Under the circumstances it does not seem that a diagnosis of pachymeningitis was possible during life. Its association with hydrocephalus is not common.

In another case of chronic pachymeningitis recently observed at the asylum, in a child twenty months old, there were no positive cerebral symptoms until four days before death. These were produced by the supervention of acute leptomeningitis, as the autopsy showed. Previous to that time it had only been observed that the child did not thrive, was listless, and rather apathetic. There was present an irregular febrile movement, rarely more than 101° in the evening.

The diagnosis of all forms of chronic meningitis in infancy presents almost insurmountable difficulties, especially when the lesion is generalized.

(To be continued.)

INCONTINENCE OF URINE IN CHILDREN.

BY CHARLES W. TOWNSEND, M.D.,
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A STUDY of the etiology of any disease or abnormal condition, its frequency and the circumstances under which it occurs, is always essential to the rational and successful treatment of that condition, while the treatment of a disease as a symptom without regard to its causation is generally as unsuccessful as it is irrational. The symptom of incontinence of urine, or enuresis, in children illustrates very perfectly this fact, for the physician who attempts to treat it in a routine way without investigating its cause generally regards it as a disease unaffected by the healing art, an idea which, as a natural consequence, prevails among the people.

As shown by Goltz,* there is a reflex centre for micturition in the lumbar spinal cord. Impulses descending from the brain call this centre into action, and result in contraction of the muscles of the walls of the bladder and ejaculator urinæ, and in relaxation of the sphincter, thus causing micturition. The sensation of a full bladder is, of course, the normal incentive to this reflex act. In the child, owing to the high state of tension of the nervous system, various peripheral irritations may send reflex impulses to this centre, which, proving too strong to be overcome by impulses from the brain, throw the centre into action, and involuntary micturition, or incontinence of urine, is the result. This would occur most naturally during sleep, when the centre for volition is least active, but if the irritation be strong enough, it may occur as well during the waking hours. Various reflex disturbances would therefore be among the causes of incontinence of urine; a second cause would be found in a relaxed or atonic state of the bladder, and a third in any malformation of the bladder or urethra.

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* Pflüger's Archiv, viii. p. 474.

The following table of these three great causes, with their subdivisions, will, I think, be sufficiently clear after this physiological explanation:

Causes of Incontinence of Urine.

I. Reflex.
  1. Increased quantity of urine:
     (*a*) diabetes, (*b*) nephritis.
  2. Irritant quality of urine:
     (*a*) increased acidity, (*b*) uric acid crystals, (*c*) calcic oxalate crystals, (*d*) excess of phosphates.
  3. Vesical calculus.
  4. Hypersensitive state of external genitals from:
     (*a*) stricture of urethra.
     (*b*) phimosis.
     (*c*) balanitis or vulvitis.
  5. Anal irritation from:
     (*a*) pin-worms.
     (*b*) eczema.
     (*c*) fissure.
  6. Psychical.
  7. Increased irritability of bladder.
II. Atony of sphincter vesicæ.
  1. General debility.
  2. Spinal disease.
  3. Acute febrile disease.
III. Malformations of bladder or urethra.

Owing to the common idea that this disorder cannot be cured, statistics obtained from lists of diseases treated in out-patient departments give no idea of its prevalence. Thus, Adams* finds that out of nineteen thousand two hundred and sixty-one cases in children's out-patient departments of various hospitals, only fifty-five applied for treatment for incontinence.

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* Journal Am. Med. Assoc., 1885, iv. 6.

I found that in fifteen hundred cases of children's diseases treated in the medical out-patient department of the Boston Children's Hospital, twenty-five applied for treatment for this disorder. Morris* states that in some boys' reformatories one boy in twenty wets his bed, and that incontinence is even more frequent than this among the colored.

In order to get some idea of the prevalence of this disorder and its most frequent source, mothers of families as met in a dispensary district and at the out-patient department of the Boston Children's Hospital were asked the ages of all their children, their general health, the time at which incontinence ceased, or, if it continued or began again later in life, the particulars of this habit were inquired into and the child examined if possible. The families were therefore all among the lower and lower middle classes, and the results are rather surprising that twenty-one and a half per cent. of all cases were found to have or have had incontinence. As the mothers were generally ashamed of their children's habit in this regard, it is probable that some cases that existed may have been denied, and therefore that the figures are not exaggerations.

The following is an analysis of my cases: Boys, 179; girls, 176; total number of children, 355. Of these, 77 were incontinent, 278 were not, or twenty-one and a half per cent. of all cases were incontinent; and of these, 42 were boys, 35 were girls. The incontinence was diurnal and nocturnal in 28, diurnal only in 2, and nocturnal only in 47.

The ages at which the physiological incontinence of infancy ceased were:

Under 1 year	in	45
1 to 1½ years	"	129
1½ to 2 "	"	45
2 to 2½ "	"	44
2½ to 3 "	"	15
Total,		278

Cases in which incontinence continued beyond the third year were classed among the abnormally incontinent. Incontinence was found rarely to cease before the ninth month; in three it was said to have stopped at six months, and in one at three months. It continues generally longer at night than day, and is apt to recur in slight acute diseases, especially colds.

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* Med. and Surg. Reporter, 1881, xliv. 652.

In fourteen cases incontinence came on after the primary incontinence of infancy had ceased, and of these it began again in seven at the sixth year, in six before that age, and in one—a boy—at the age of fourteen and a half years. Of the sixty-three in whom incontinence continued from infancy, in eighteen it had ceased; of these, in six it stopped at four years; in one, at five years; four, at seven to nine years; five, at eleven to thirteen years; one at fourteen years, and one at sixteen years. The average age of the remaining forty-five in whom incontinence still continued was found to be seven and a half years.

Of the list of families, six were found where two members were affected by this disorder, three, where three members were affected, and in one family four members were incontinent, the family in this case consisting of five members otherwise healthy, and no cause for the trouble other than an irritable bladder could be found.

Where the incontinence occurred in the day, it was frequently said that if the child could go at once to the closet when the sudden desire to micturate came on the clothes would be saved. But in school, where this was impossible, and often elsewhere, the accident would occur. In some cases the mothers stated that drinking water the last thing at night was followed by bed-wetting. In many cases the mother would try to prevent the wetting by taking up the child once or twice in the night and compelling it to pass its water, but although this precaution was in some cases successful, in others it was not.

The following is a list of the causes of incontinence in the seventy-seven cases:

Long and adherent prepuce	8
Small meatus	1
Vulvitis	1
Pin-worms, or pruritus ani	4
Sloth and habit	6
Epispadias	1
Atonic condition, of which 4 were rachitic and 1 idiotic	18
No cause found	38
	77

In a considerable number of these cases no examination was made, as the child was not seen, and these were put down among those in which no cause was found. The following list of chronic diseases in which incontinence did not occur is of interest:

Pott's disease, 2; hip-disease, 3; scrofula, 8; rachitis, 3; chorea, 5; lateral curvature, 1; petit mal, 1; inguinal hernia operated on unsuccessfully, 2; pin-worms, 1; leucorrhœa, 1. In one case incontinence occurred nightly till the fourteenth year, when menstruation came on; after that the incontinence ceased.

Of the cases put down as due to sloth and habit, five were in dirty families, and had been cured by the use of the rod. In the other case the habit came on after a fall on the back, and was nearly cured by the mother threatening to whip the child every time she wet the bed. After this, from occurring nightly it occurred only once a week. But, on the other hand, a large proportion of the cases are scolded and whipped for what they cannot help, as is evident from the uselessness of this heroic treatment in the majority of cases. Parker* says that punishment tends to confirm the habit.

The case of small meatus was treated by nicking and stretching the meatus, after which incontinence occurred only twice in several weeks.

Of the eight cases of long and more or less adherent prepuce, in one circumcision was followed by marked improvement, but not a cure, of the incontinence. In a second case the long prepuce was removed, with improvement of the symptoms for a few days, but incontinence returned as badly as ever at the end of a fortnight. In another case—a well-developed boy of ten years—incontinence of urine, both diurnal and nocturnal, had continued since infancy, with also almost daily incontinence of fæces. The boy was much mortified, but protested his inability to prevent it. Whippings and scoldings had been of no avail. There was slight balanitis from constant maceration in wet underclothing, and, although the prepuce was of but moderate length, it could not be retracted owing to adhesions all around the corona. These were broken up with the finger-nail.

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* Obstet. Journ. Grt. Brit., 1880, p. 206.

The boy was seen last four months after the operation; there had been no incontinence of fæces and no bed-wetting, and he had wet his clothes only once or twice a month, probably through carelessness.

As to its frequency in circumcised Jews an inquiry would be interesting, but its occurrence among them would simply show that other causes than a long prepuce may be responsible for the trouble. Among seven Jew boys in my list, two had been incontinent, but were cured by whipping. The surroundings were very filthy.

It is a very easy matter to find a long prepuce as the cause of incontinence, or any other reflex symptom, in boys, simply from the fact that a long prepuce is the rule, and even adhesions occur in a large number of cases. The investigations of Roswell Park* on the condition of the prepuce in hospital and private practice in boys under nine years of age are of interest here, and are as follows:

	Number.	Per Cent.
I. Cases permitting easy and perfect retraction of prepuce	30	19.62
II. Cases of slight or partial adhesions with little or no retained smegma	48	31.37
III. Cases of complete or nearly complete adhesions without stenosis but with retained smegma	36	23.53
IV. Cases where retraction was impossible and adhesions only could be felt by probe	39	25.48
	153	100.00

Adams† regards circumcision as a reliable cure for incontinence, and states that he has known only one instance where the incontinence continued after the operation, and in that case there was a possibility of stricture as the cause. D. B. Simmons‡ thinks that the adhesions and not the long prepuce are the cause of the trouble; of fourteen cases of incontinence twelve were cured by breaking up the adhesions, in one case without adhesions the removal of smegma sufficed, and in the remaining case, a young man just past puberty, relief was obtained by the passage of a steel sound. In one of the above cases there was also incontinence of fæces, which was cured as in my case. Klingensmuth* gives three cases of cure by circumcision; others, however, have found no result from the operation in some cases, and in others there has been a return of the habit in a few weeks after a seeming cure.

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* Chicago Med. Journ. and Exam., 1880, p. 561.

† Archiv. of Pediat., April, 1887.

‡ Am. Obstet. Journ., 1880, xiii. p. 431.

Farquharson† speaks of a case where the operation was temporarily curative, but nocturnal incontinence returned and defied all treatment. C. L. Dana‡ gives two cases, both of whom had long, adherent, irritated prepuces, both had various nervous symptoms, the first only having incontinence. In this one circumcision was done without improvement. The second was not circumcised, but improved under various tonic treatment. Summing up, then, we may say that circumcision in some, but not in all, cases is followed by a relief from incontinence of urine, whether this cure be due to the impression on the nervous system of the pain and excitement of the operation, or whether it is the direct result of the removal of the point of irritation. Where circumcision is not curative, it is still possible that the long prepuce may have been the original cause, and that the symptom continues simply from habit.

Where other reflex causes exist, such as abnormal quantity or quality of the urine or anal irritation (*vide* table), they should be treated. In the psychical class are to be included those cases where the child dreams of urinating, or has a nightmare and wets the bed. In some cases it appears to be similar to nocturnal pollutions of adults, by which it is superseded. In girls, as we have already seen, the incontinence may cease on the establishment of the catamenia. A plausible explanation for these cases is that the incontinence of the child acts as an escape-valve for reflex irritation, which after puberty is relieved by menstruation in the female and nocturnal pollutions in the male. These psychical cases are to be treated by avoidance of late suppers and of sleeping on the back, and by the use of bromides if necessary. The dorsal position, by favoring hyperæmia of the cord, makes the reflex centre for micturition in the lumbar region more ready to react to slight impulses.

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* Archiv. Pediat., 1884, i. p. 577.

† Practitioner, 1879, xxiii. p. 7.

‡ Med. Rec., 1881, xx. p. 569.

Under the head of "increased irritability of the bladder" would come all those cases where no other cause can be found, and is a convenient refuge for our ignorance. In these cases various drugs have been used, but belladonna given in full and increasing doses and the treatment continued for weeks or months is as a rule very satisfactory. The reason this drug is regarded with disfavor by some, it seems to me, is because its use is discontinued too soon and the trouble returns. For a child of five years five drops of the tincture of belladonna should be given at night, the dose being increased one drop every other night till physiological effects appear. Given by the rectum, with a small dose of morphia, as recommended by Dr. E. T. Williams,* I have also found very effectual.

Ergot is another drug highly recommended by some, and believed to act by contracting the blood-vessels in the lumbar cord.

Goodhart† says that by long persistence of the habit the bladder becomes so contracted as to be incapable of holding the normal amount of urine, and in these cases he overcame the difficulty by distending the bladder by injecting water, the patient being chloroformed.

Atony of the sphincter vesicæ due to debility is probably not very common. Here nux vomica or its alkaloid, strychnia, and iron should be used. Some have had very good results from the use of electricity, one pole, the cathode, according to Althaus,‡ over the bladder, the anode over the lumbar region of the spine. Others place one pole in the membranous urethra or at the perineum. A tepid or cold sitz-bath at night, or cold douche or counter-irritation to the spine, are also to be recommended.

Every mechanical device for preventing the escape of urine is as harmful as it is irrational, whether it be a simple string tied around the penis or the elaborate apparatus of a physician* in Australia for giving an electrical shock to the offending member as soon as the first drop of water is passed.

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* Boston Med. and Surg. Journ., Sept. 16, 1887, p. 257.

† Diseases of Children, p. 451.

‡ Brit. Med. Journ., 1883, i. p. 104.

THE TREATMENT OF PERTUSSIS.†

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PERTUSSIS, or whooping-cough, has until of late years been considered a disease of such minor importance and self-limited that the expectant and sedative plans of treatment have been thought to be all-sufficient. In fact, the profession has quietly ignored the claims that the etiology, pathology, and therapeusis of whooping-cough should be more thoroughly investigated, and the result has been that no therapeutical measures have been adopted that have proven satisfactory.

Waring's "Therapeutics" contains a list of thirty-five remedies, comprising tonics, antispasmodics, astringents, and antiseptics or germicides, that are recommended in the treatment of this affection. The major portion of this list is composed of antispasmodics. And for a long time this class of remedies was almost exclusively used, the theory being that the disease was of nervous origin. But this method of treatment has always been disappointing.

In 1867, Poulet discovered in the sputum of whooping-cough patients a germ which he believed to be the cause of the disease. Burger also discovered a peculiar granular matter which has been termed the bacillus pertussis.

In accordance with this theory of the etiology of the disease, Dr. Moncorvo, of Rio Janeiro, treated with very good results a number of cases by applying to the larynx a one-per-centum solution of resorcin.

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* Anderson, Austral. Med. Journ., 1884, n. s., vi. p. 99.

† Read before the Chicago Medical Society, November 7, 1887.

The editor of the *New England Medical Monthly* reports twenty-five cases cured by inhalations of eucalyptus.

Dr. Kohlmetz, of Stetin, relieves the cough by using quinine internally and locally.

Dr. Mohn cures by burning sulphur in the room of the patient and allowing the patient to inhale the fumes, well diluted with air. The observations of the mildness of the disease among children who live among or near gas-works and inhale illuminating gas have been recorded for many years.

During the last seven years a large number of physicians have had good success by applying to the larynx—in the form of sprays, powders, vapors, etc., as the case demanded—such antiseptic or germicidal drugs as carbolic acid, boracic acid, iodoform, eucalyptus, resorcin, thymol, and terebene. For the past seven years I have employed a five-per-centum solution of carbolic acid, moistening a sponge with this solution and tying it over the mouth of the patient in a respirator. But I experienced a great deal of difficulty in carrying out this treatment in the case of refractory children, and this led me to adopt a hint given me by Dr. H. M. Thomas. He suggested that drugs in solution could be carried by inhalation into the finer bronchial tubes by the use of Semple's atomizing inhaler, since this instrument produces a fine, smoky vapor that is unirritating to the larynx. In the case of children I adopted the method of attaching a tube to the inhaler and placing it in the child's mouth, so that the vapor would be freely inhaled. I was successful in relieving the cough and expectoration and cutting short the disease beyond my expectation. The solutions used were: No. 1, five-per-centum solution of carbolic acid. No. 2, five-per-centum solution of oil of eucalyptus in liquid vaseline. No. 3, Dobell's solution. No. 4, Keating's solution,—thymol, gr. xv; alcohol, ʒiii; glycerin, ℥ss; water, ℥xxxiv. Solve. No. 5, muriate of cocaine, gr. xxv; resorcin, gr. xxviii; water, ℥ii. Other anodynes can be incorporated in the solutions, and, as the vapor is very fine, absorption of the drugs through the pulmonary mucous surface undoubtedly occurs, hence it is not advisable to administer anodynes internally if the solutions contain anodynes.

Solutions one, two, and three were used when the cough and expectoration were not troublesome. In case expectoration was difficult or the mucus tenacious, number three or four was used. If the spasmodic cough was severe number five served a good purpose, and it was never necessary to give anodynes internally to relieve the cough or produce sleep.

The treatment of complications and during convalescence was according to the indications.

My object in presenting you this brief paper is not to detail a treatment that I claim is specific or infallible, but I wish to arouse, if possible, a free discussion by my brother practitioners as to the therapeusis they have found most beneficial in the largest number of cases.

Current Literature.

I.—HYGIENE AND THERAPEUTICS.

Buckley: Infant-Feeding, especially with Reference to Subjects with Infantile Eczema. (*Jour. Am. Med. Asso.*, October 15, 1887.)

In the author's experience too little consideration is given to the subject of diet in the management of infantile eczema. He insists upon regular intervals of, and not too frequent, nursing. Large quantities of tea, beer, or chocolate taken to increase the secretion of milk he believes to be more or less injurious, and considers milk, if properly taken, the best means of increasing the secretion of human milk. In the case of small infants with eczema, when breast-milk is not obtainable, cow's milk properly treated is preferred to any of the artificial foods. Attention is called to the value of wheat-products as an element in the nutrition of even young infants with eczema, as well as those of older years. Crushed wheat is well boiled, and then left to stand all night, and again boiled thoroughly in the morning a second time. It is then put in a fine sieve, and water added to it, and rubbed until most of it passes through, leaving the hard and husky parts behind. This may then be given in a fluid state, either mixed with water, sweetened and salted, or with milk; or it may be eaten as mush. In this manner the nutrient portion of the wheat is dissolved by the repeated cooking, and the phosphates and gluten are extracted with the starch, all in a very assimilable form. He believes that wheat given in this way furnishes about the most perfect nourishment for the growing child, and with milk supplies all that can be desired. In older children —that is, between one and three years of age—preference is given to wheat preparations rather than oatmeal, which will frequently be observed to increase an eruption. Bread made from whole-wheat flour, with plenty of butter, improves these cases, especially if they are under an alkali medication. Meat-juice in moderation is allowed. As the child grows older the diet must be more varied.

Chapin: Predisposing Causes of Disease in Early Life. (*Med. Rec.*, October 29, 1887.)

Although we are told nothing new, still the facts enunciated in the paper are too often ignored or forgotten, and, like a good story, can well bear repetition.

Young protoplasm is quickly recuperative, and when the source of irritation is removed, should speedily return to a healthy condition after inflammatory action. If this do not happen, there must be some vice of system to explain a delayed recovery. The three most frequent conditions that produce a marked susceptibility to disease are rickets, scrofula, and syphilis. Of these rachitis, especially incipient rachitis, is the commonest predisposing factor. A recognition of any of these constitutional states in a sick child will necessarily influence the practitioner in his prognosis, and by appropriate specific treatment, added to the management of the more recent trouble, enable him in the majority of cases to obtain more satisfactory results.

Jaube: The Nutriment of Children in the First Months of Life. (*Centr. f. Kinderh.* [abstracted], August 20, 1887.)

Changes in the management and treatment at the Leipzig Foundling Asylum in recent years have led to a great diminution in the mortality of the children, and also to the compelling of twenty per cent. of the fathers to contribute to the support of their illegitimate offspring. About four hundred children are cared for in this institution each year. In order to furnish a milk-supply to the children which should be as nearly uniform as possible, specimens from various dairies were examined with reference to their contents in fat and casein, and an average from these was selected, which was given to the children undiluted, but partly skimmed. This plan may have been suggested by the fact that bottle-fed infants are often supplied with milk which is very poor in fat and casein, and though they may be allowed to drink as long as they will they may get little but sugar-water. Many series of weighings have shown that a child who gets eight hundred to one thousand grammes of mother's milk daily will thrive well upon it. The artificial foods which are most esteemed at this hospital are Voltmer's *Altona artificial mother's milk* and that which is prepared by means of Soxhlet's apparatus. A graduated bottle is in use which is considered of great value, as it contributes to exactness in keeping the diet-records. The question arises whether the plan of feeding during the first few months of life with milk which has been very little diluted, though given in smaller quantities than is customary, is a good one. Anatomical and physiological conditions should be consulted for an answer. The onward movement of the contents of the stomach is not due alone to the muscular structure of the stomach nor to the relatively lower level of the pylorus, for it is an important fact that the fundus lies farther forward than the cardiac orifice, and when the stomach is moderately full takes a position suggestive of its being emptied, because the enlargement of the organ is due mainly to the greater curvature. As the organ becomes more completely filled the onward movement of its contents becomes an opposing force to the dilatation at the greater curvature; the greater the latter the slower must the former be. Stomach digestion in infants usually requires somewhat less than an hour; the more slowly the contents pass through the duodenum the more completely digestive secretions are being used. If the milk is very much diluted it will pass more quickly through the stomach, and hence is the more likely to cause constipation. The slow increase in the volume of the stomach after the first month of life also argues in favor of concentrated nourishment. In the first month of life equal parts of milk and water may be given; in the second, two parts milk and one of water, if the child is healthy. At noon, after the second month, a portion of sugar-water equal to the ordinary nursing of milk and water for that period may be given, and at a somewhat later period small portions of starchy food will be suitable. After the end of the first month, one or two teaspoonfuls of good fresh cod-liver oil may be given daily. Phosphorated cod-liver oil has been recommended by some writers, but the author has obtained no better results from it than from the plain oil. A. F. C.

Calatraveno: Baths in Childhood. (*El Progress Ginecologico*, July 10, 1887.)

The great importance of bathing establishments in the treatment of disease in adults has long been recognized, but the principle has not been applied to any great extent in the treatment of disease in children. In view of the great number of children who are affected with chronic diseases, especially scrofula and tuberculosis, and the eminent advantages which are to be obtained by the systematic use of water, the author makes a plea for its more extended use. Children with these diseases should be removed to a station by the sea-shore, where the constant inhalation of the pure atmosphere will serve as a powerful tonic. The beneficial effect of playing in the warm sand must not be overlooked. If the child is feeble and the water cool it should not be used more than five minutes at a time, whether by pouring, sponging, or immersion. Small quantities of sea-water may also be drunk with advantage with each bath. Of course the child should not be bathed while the body is warm, nor within three hours after the last meal. Currents of air should be avoided during and after the bath, and the child should be encouraged to take some exercise immediately after being dressed. Of the medicinal waters which are of service in the treatment of scrofula, the sulphur waters of all kinds are effective, but those containing sodium-chloride are more so. For the poor who cannot go either to a mineral spring or to the sea-shore hygienic treatment at home is quite possible, artificial salt or sulphurous water being readily and cheaply obtained, and home treatment by rubbing and douching being also possible. For children from one to three years of age the temperature of the bath should be 16° to 20° C., and the back, arms, and legs should be briskly rubbed every day. From six to ten years of age the rubbing should be general, and the duration and frequency of the baths or douches regulated by the resisting power of the patient. If sulphur-baths are indicated, a few grains of sulphate of potash added to the water of the bath will procure the desired condition. If such means of treatment were more generally adopted with scrofulous children there would be fewer developments of phthisis among them, and a more robust condition of health in general. A. F. C.

Senator: The Use of Fats and Fatty Acids in Chronic Wasting Diseases. (*Centr. f. Kinderh.* [abstracted], September 3, 1887.)

In chronic diseases accompanied with great emaciation, the custom is to prevent loss of fat as much as possible, and also to administer fats, if they can be borne. The fat in ordinary nutriment will fulfil both these indications, while it acts also as a reserve supply, and tends to limit the albumen metamorphosis, and diminishes the disintegration of the albumen in the nutriment as well as in the body itself. Fluid fats, however, easily become intolerable, and especially is this the case with cod-liver oil. The author, therefore, has made use of the more solid fats in the treatment of these diseases, especially taking spermaceti, which was long ago used in the treatment of disease in children, and powdering it, administering it in teaspoonful doses, either alone or with the addition of three parts of sugar. After the use of fifteen to twenty grains of the spermaceti daily for some time no considerable quantity of fatty acids could be recovered from the fæces. A mixture of spermaceti and oil was also used in some experiments upon dogs, and only a portion of it could be recovered from the fæces; the remainder must have been digested and absorbed. Since fats are broken up in the intestine into fatty acids and glycerin, and the latter may undergo acid fermentation (which may partly account for the disturbances of digestion occurring after the use of fats), and since the fatty acids will have the same effect upon the tissues as fats themselves, it occurred to the author to have coated pills made, containing each three decigrammes of palmitin acid and fifteen centigrammes of oil acid, and these were well borne by the stomach. The author deemed it feasible to administer fats with alkalies,—that is, in the form of soap,—believing that the same effect upon the tissues would be produced as by the use of the fats alone. A portion of the fats ingested must be converted into soap in the intestine, and this labor might be saved by administering the soap *per se.* Coated pills were made for the author from medicinal soap dissolved in gum. It was also given in the form of powder, with the addition of sugar or oil sugar, and could readily be taken in this form. Good results from this treatment were seen in diabetes, phthisis, chronic icterus, and cirrhosis of the liver, and no accidents occurred. It is desirable that, in addition to the soap, spermaceti and cod-liver oil should be given whenever possible. A. F. C.

Monti: Kefir and its Use in Pediatrics. (*Centr. f. Kinder.* [abstracted], August 20, 1887.)

The use of kefir, which has been recently recommended by different writers for use in the first year of life, seems to set at defiance modern teachings, that the nutrition of infants must be protected as earnestly as possible from infection by fungi. The preparation in question is made from boiled milk, to which a few grains of kefir have been added, or from milk which has already undergone fermentation, and is distinguished from the product of simple lactic acid fermentation by its quantity of alcohol, which increases from four-tenths per cent. on the first day of its preparation to one and five-tenths per cent. on the third. It also contains a large volume of carbonic acid. Its action in converting albuminoid matter into peptones is very slight. The author has prescribed kefir for dietetic purposes for children and infants many times. For infants he has found it best to use it only one or two days at a time, and then diluted with water. Indications for its use are anæmia, emaciation after severe and exhausting disease, chronic gastric and intestinal catarrh, catarrh of the air-passages, and chronic pneumonia, kidney-diseases, and arthritic rheumatism. It is better to give small quantities of the kefir for a long time than the reverse. In the greater number of cases in which it was used the author observed increase of appetite and increase of weight. If the kefir is well prepared, nausea and vomiting seldom occur. It is not always easy to obtain the kefir in a pure state, however, especially as it is prepared in the shops, and in such cases there is risk in giving it, especially to infants, for it may mean the administration of milk containing fermenting, and possibly pathogenic, germs as nutriment. A. F. C.

II.—MEDICINE.

Howard: Hepatic Cirrhosis in Children. (*Am. Jour. Med. Sci.*, October, 1887.)

The writer reports two cases of this rare affection in children in which neither the use of alcohol nor the virus of syphilis can be assigned as the cause.

He then reports a careful study of the clinical histories of sixty-three cases occurring in children before puberty, of which he has been able to collect the records, and as the result of this analysis he finds: 1. That most of the established causes of the disease in adults obtain also in children, more especially the use of alcohol, present in 15.8 per cent. of the whole number; syphilis, chiefly hereditary syphilis, present in eleven per cent.; tuberculous disease of other organs than the liver in eleven per cent.; also, but much less frequently than these, venous congestion of the liver, peritonitis, and a general tendency to connective-tissue formation in the system. 2. That syphilis occasionally tends to a diffuse interstitial hepatitis or cirrhosis by first inducing an adhesive inflammation of the portal vein. 3. That a general arterio-capillary fibrosis is not proved by these cases to be the result, and probably not even a frequent cause, of hepatic cirrhosis in childhood. 4. That more than half of the cases of hepatic cirrhosis in children do not appear to be produced by the above-mentioned well-established causes of that affection. 5. That there is some evidence that cirrhosis of the liver may be very exceptionally induced by the acute infectious diseases,—cholera, typhoid fever, measles, scarlatina,—but that proof of this is wanting. 6. That the habitual use of a stimulating diet, or the absorption of the products of faulty digestion, are probably fruitful sources of hepatic cirrhosis in children. . 7. That it is in harmony with what is known of the causes of hepatic cirrhosis to believe that the bodies known as ptomaines may be capable of exciting a cirrhotic condition, and that investigation of this subject deserves attention. 8. That the period of childhood most liable to cirrhosis of the liver is from the ninth to the fifteenth year, inclusive, but that it may be congenital, and may occur at any age after birth. 9. That it is twice as frequent in male children as in the female. 10. That its symptoms are essentially the same in childhood as in adult life. 11. That it is frequently accompanied by pyrexia. 12. That ascites or icterus, and frequently both together, are of common occurrence in the atrophic and hypertrophic forms. 13. That the group of symptoms which have been referred to cholæmia or to cholesteræmia or to alcoholia, and even sometimes to uræmia, frequently ushers in the fatal issue of hepatic cirrhosis in children.

Dana: Hereditary Tremors. (*Amer. Jour. Med. Sci.*, October, 1887.)

The writer calls attention to a peculiar hereditary motor disorder which has not heretofore been systematically described, but which he has seen and studied in three families, and in all it produced a general clinical resemblance. The affection consists of a fine tremor, controlled for a brief time, affecting nearly all the voluntary muscles, chronic, beginning in very early life, not progressive, not shortening life, not accompanied with paralysis, or any disturbances of nervous function. It resembles to some extent the tremor of paralysis agitans, still more a simple neurasthenic tremor. A most striking clinical feature is its marked hereditary or family type, and its transmission along with other nervous diseases. It begins in infancy or childhood, sometimes being brought out by an infectious fever. It continues without progressing in severity during a lifetime, which it does not shorten. The family history will reveal neuroses or psychoses.

The upper extremities are most noticeably affected, but it may involve the head, neck, eye, laryngeal, or, in fine, any of the voluntary muscles. It ceases during sleep, and can be inhibited temporarily by the will. Everything that produces excitement or nervousness increases the tremor. It may be barely noticeable, except under some excitement or the influence of alcohol or tobacco. It does not interfere with delicate co-ordination. It neither stops nor increases on ordinary voluntary movements, in this respect differing from the tremors of paralysis agitans or multiple sclerosis. There may be with it slight contractures of the fingers, also developed early, and non-progressive, but there are none of the forced movements, rigidity, paresis, subjective sensations, or osso-motor disturbances of paralysis agitans, while the head and neck are not so much affected as in senile tremor. The tendon reflexes may or may not be exaggerated. The tremor is most nearly like that occurring in neurasthenic states, or from poisons, only there is no general nerve-exhaustion, and no muscular weakness. It is associated with other neuroses or psychoses, such as insanity, inebriety, and epilepsy, and also with examples of unusual latent or intellectual vigor.

Osler: The Cardiac Relations of Chorea. (*Am. Jour. Med. Sci.*, October, 1887.)

The heart-symptoms of chorea demand special consideration as among the most important and peculiar features of the disease.

Chorea is rarely a fatal disease in children, and hundreds of cases may be treated without a death.

By far the most serious fact in the clinical history of the disease is the occurrence of endocarditis; but here the danger is remote, not immediate, and lies in the changes which an acute valvulitis may initiate. A satisfactory study of the cardiac relations of chorea must embrace the condition during the attacks, and the subsequent heart-history after a period of years. The first question has engaged the attention of many workers, and Dr. Osler has worked out the second on a scale not hitherto attempted. He has carefully re-examined one hundred and ten of the choreic cases treated at the Infirmary for Nervous Diseases between 1876 and March, 1885, the examination in every case having been made more than two years subsequent to the attack of chorea.

In forty-three cases the heart was normal, in fifty-four there were signs of organic disease, and in thirteen there was functional disturbance.

A study of these cases, Dr. Osler thinks, justifies the following conclusions: 1. That in a considerable proportion of cases of chorea—much larger than has hitherto been supposed—the complicating endocarditis lays the foundation of organic heart-disease. 2. In a majority of the cases the cardiac affection is dependent on rheumatism, and cannot be regarded as in any way associated with it. 3. As the presence of an apex systolic murmur in chorea is usually an indication of the existence of mitral valvulitis, as much care should be exercised in this condition as in the acute endocarditis of rheumatism. Rest, avoidance of excitement, and care in convalescence may do much to limit a valvulitis, and obviate, possibly, the liability to those nutritional changes in the valves wherein lies, after all, the main danger.

Taylor: Primary Malignant Degeneration of the Kidney in Infancy. (*Am. Jour. Med. Sci.*, October, 1887.)

Primary malignant degeneration of the kidney is most frequently met with at the two extremes of life,—infancy and old age.

Dr. Taylor's elaborate article is based on a study of one hundred and forty-four cases as it appears in the first period.

Eminent authorities, both in America and Europe, have expressed the opinion that it is unjustifiable to remove degenerated kidneys in infants; but these same authorities for the most part advise the removal of sarcomatous kidneys in adults, their conclusion being based upon the statistics of the operation.

A critical examination of the cases of this operation is, therefore, in place in order to determine whether or not their verdict should be final.

After a careful consideration of this question, Dr. Taylor expresses himself as decidedly in favor of the operation, and thinks that if made when the tumor is still small, its results in the percentage of permanent recoveries will compare favorably with those of malignant degeneration of other organs. It has so far succeeded in lengthening the lives of ten children, and in saving some of them. There is every reason to hope that in the future early diagnosis and early operations will show a much larger percentage of cures. As in all other malignant tumors, an early removal is necessary to success, but even late operations may lengthen life and possibly save it. He advises that exploration incisions be made whenever it is possible, and if extensive adhesions or visible metastatic growths forbid further interference, then desist from the operation.

Klein: The Etiology of Scarlet Fever. (*Centr. f. Kinderh.* [reviewed by Escherich], August 20, 1887.)

The author's investigations were made in connection with an epidemic of scarlet fever in four different districts of London, in

November and December, 1885. The disease was confined to people who were supplied with milk from a dairy at Hendon, in the vicinity of London. It was also shown that the first cases of the disease occurred a few days after some new milch-cows had been received into one of the stables, and that it was the milk from this stable which caused the disease, and subsequently milk from contiguous stables to which diseased cows were transferred. Further, after the sale of the milk in London had been prohibited, and its use was limited to the poor people in the locality in which it was produced, the disease appeared among them, though they had previously been free from it. The extension of the disease ceased when the people ceased to use the milk from this source. The committee of investigation found that the cows at the stable in question were suffering from a disease which had not previously been recognized, the external signs of which were vesicles and swellings upon their udders, and that the disease spread rapidly from one cow to another. They accordingly looked upon this disease as the probable cause of the scarlatinal virus which was present in the milk from this dairy. The reviewer does not think, however, that they have made it clear in their report that this disease in the cows was the only possible agent by which the scarlet-fever epidemic could be propagated, for it must be borne in mind that public prejudice in England is very strong in considering that milk may be the source of epidemics. Cameron, who was a member of the investigating committee referred to, observed that the disease began with rise of temperature and general *malaise* (in the cows). On the sixth or seventh day the teats became swollen and œdematous, and upon them appeared vesicles containing a clear fluid, the vesicles being converted in a short time either into superficial tumors or scabs, which disappeared after a few weeks. On the skin there appeared, on the second or third day of the fever, swelling and red spots in the vicinity of the eyelids, over the sacrum, and on the outer side of the hips, the rest of the surface being normal in appearance. Desquamation occurred in two to four weeks after the beginning of the disease, the hair falling from the affected parts, and the skin at those parts presenting the appearance of a moist or a scaly eczema. In addition to the foregoing symptoms the cows suffered from dry cough, discharge from the nose and conjunctiva, and inflammation of the pharynx. Their milk, after standing for a while, seemed to gather a thread-like film upon it.

Cows which had recently calved were first affected, and from them the disease was transmitted to other cows through the medium of the contents of the vesicles upon the teats, which was transferred in the process of milking. The disease usually ran a mild course, and ended in complete recovery. Occasionally it terminated in emaciation or in death. Klein studied the nature and pathological anatomy of this disease. Examination of the viscera of two cows which died from it showed hyperæmia of the lower segments of the lungs, sub-pleural ecchymoses and fresh pleuritic deposits, spotted appearance of the liver, and hyperæmia of the cortical layer of the kidneys. Two calves were inoculated with the secretion from the vesicles upon the udders, and the result was ulcers with infiltrated bases at the sites of inoculation. Microscopical examination of sections from the tumors upon the udders showed that there had been an intense exudation process, bloody serum being deposited in the superficial layers of the rete Malpighi, and the neighboring corium closely infiltrated with round cells. In the secretion from the vesicles numerous diplococci and consecutive chains of biscuit-like organisms were seen, resembling the streptococcus found by the author in connection with the foot- and mouth-disease. The same micro-organisms were also found in the swellings upon the inoculated calves and in the sections made from their livers and lungs. Cultures were made from matter taken from the deeper portions of the swellings, and also from blood taken from the hearts of the calves, upon gelatin and agar-agar. The resulting cocci differed from those of the mouth- and foot-disease in that they coagulated milk in two days, while the latter did not affect it at all. Two calves were inoculated with subcutaneous injections of pure cultures. One of them died in twenty-seven days, from peritonitis, pericarditis, and other symptoms of intercurrent sepsis. The lungs were hyperæmic in spots, there were infarctions and pleuritic deposits in which cocci were found. From the heart's blood streptococci were obtained; the liver contained collections of round cells, not unlike miliary abscesses, and the kidneys showed glomerulo-nephritis. In the other calf the skin around the mouth assumed a mottled appearance five weeks after inoculation, and on the next day the animal died. Examination showed the same changes which had taken place in the other calf. Klein's conclusion was, therefore, that the disease in the cows at Hendon was an infectious general one, caused by the streptococcus which has been described, and that the scarlet-fever epidemic was traceable to this source. Experiments were made in eleven of the cases occurring during this epidemic, and in four of them, after inoculating gelatin and agar-agar with large quantities of blood, he was successful in obtaining a chain coccus identical with that obtained from the Hendon cows, and this was pathogenic in mice to a high degree. Eight calves were also inoculated with cultures from the four cases just alluded to, each case being utilized for two calves. The matter was injected subcutaneously, and was also mixed with the animals' food. All of them became sick, manifesting the same phenomena which were seen in the calves which had been inoculated with cocci obtained from the originally diseased cows. The same changes were also found in the internal organs. The conclusion was therefore drawn that this coccus was also the bearer of the human scarlatinal virus, and by its presence in the milk from the Hendon dairy had given rise to the epidemic. Three kinds of milk epidemics are recognized by Klein, numerous examples of them being furnished by English medical literature: 1. Those in which the infective material is communicated to the milk by direct contact with the scarlatinal patients, perhaps by children in the desquamative stage of the disease remaining for a longer or shorter period of time in the room where the milk or the milk-pans are kept. A few days later an epidemic of scarlet fever breaks out among the families which are supplied with this milk. 2. Those in which the transmission of the poison is indirect, a cow being first infected, and then its milk. As an example of this, two children of a dairyman were attacked with scarlet fever and diphtheria respectively; one of them was removed from the house on the 1st and the other on the 3d of March. The dairyman distributed his milk immediately after the milking. On the 10th of the same month scarlet fever broke out among his patrons, and additional cases continued to appear until the 17th, all of them among those who used his milk. 3. Those in which the relation between the disease in human beings and animals can be traced directly. The epidemic which was attributable to the milk from the Hendon dairy is an example of this. As a further item concerning the etiological significance of the micrococcus scarlatinæ obtained from the milk, the author succeeded in obtaining and cultivating it from the *Rose* brand of condensed milk, which stamps that brand as suspicious. He also obtained it from the blood and viscera of an ape which died five days after drinking milk which was supposed to have been the means of propagating scarlet fever. The following rules in regard to the use of milk which may contain scarlatinal germs are offered: Milk, the places and implements in which it is kept, and the cows themselves must be isolated from all possible contact with the subjects of scarlatina. The stables should be under the constant supervision of a veterinary physician, diseased cows at once isolated, and the sale of their milk forbidden. If the milk has been contaminated by germs, the latter can be killed by a temperature of 185° F.; boiled milk is, therefore, perfectly safe as far as infection is concerned. The results of the experiments which have been detailed were confirmed by an additional series, in which cows which had calved within two or three weeks were inoculated with cultures from human scarlatina. The same phenomena were observed as at the Hendon dairy. A. F. C.

III.—SURGERY.

Holt: Remarks upon Spina Bifida, with the Report of Four Cases. (*N. Y. Med. Journ.*, November 5, 1887.)

The first case presented a lumbar tumor. Was aspirated twice and compression applied without benefit. Aspirated a third time and sac injected with iodo-glycerin solution (Morton's fluid); convulsions followed. During next two weeks improvement noticed. A second injection of iodo-glycerin solution was made, after which convulsions developed, and continued until death.

In the second case there was a sacral tumor, which was cured by a single injection of Morton's fluid.

The third case showed a lumbo-sacral tumor. Died of convulsions on fifteenth day. No operative interference.

In the fourth case there existed a sacral tumor. Rupture of sac and death from convulsions on third day. No operation.

Stewart: Congenital Phimosis. (*Med. Register*, September 24, 1887.)

The author thinks congenital phimosis is of very frequent occurrence, and that the distress resulting from such condition continues until the force of erection of the organ overcomes the unnatural resistance. The evidence of this is exhibited in the fact that most male children, during their infancy, are more irritable in disposition, nervous in temperament, and difficult of management than females during the same period.

Convulsions and paralysis of infancy may at times be traced to excessive irritation from phimosis. His method of treatment is to stretch the prepuce with an instrument having four expanding blades, assisting in the breaking up of the adhesions and removal of the smegma by the use of the blunt end of a probe, then apply some "wholesome ointment" to the parts and draw forward the foreskin.

Ahlfeld: Congenital Deformities and Diseases. (*Centr. f. Kinderh.*, September 3, 1887.)

The following were observed in the course of a year at the Marburg Obstetric Clinic:

1. Total stricture of the duodenum at its middle portion. On the first day after birth there was a discharge of meconium and no subsequent intestinal evacuation. Then came persistent vomiting, and death on the fourth day.

2. A dark-haired woman with a lock of white hair in the middle of the anterior border of the hairy scalp gave birth to a well-developed child with a lock of white hair in the same situation as his mother's.

3. A woman with narrow pelvis gave birth to her second child after a rapid labor, the breech presenting. The child's head was pressed against the left half of the thorax, the left cheek resting against it, the left knee pressed against the left side of the nose, and there was double club-foot. Autopsy showed transposition of the thoracic and abdominal viscera.

4. A new-born child showed callosity of the foot where the side of the uterus had pressed against it.

In four children sudden hemorrhages were observed, in two of them it was accompanied by very urgent dyspnœa, and was found to be due to embolism. A. F. C.

Denhard: Intubation *versus* **Tracheotomy.** (*N. Y. Med. Presse*, September, 1887.)

The author looks upon intubation as a great advance in therapeutics when compared with tracheotomy. He considers the latter a very difficult and dangerous operation, and in this respect agrees with the opinion of such surgeons as Billroth and Gross. Of the difficulties which may or must be encountered after the operation, J. Solis Cohen considers two groups,—the first referring to the unfavorable conditions depending upon the course of the disease *per se;* the second, the complications which may result from the operation. In the first group are included the extension of the false membranes downward, sepsis, paralyses, nephritis, pneumonia, and the formation of heart-clots. These complications may occur, of course, in connection with intubation. In the second group may be mentioned hemorrhage, either from divided vessels, or from ulcerations resulting from the pressure of the canula, or from granulation-tissue, local or general emphysema, inflammation of the operation wound, erysipelas, abscess, gangrene, diphtheria of the wound, ulcerations of the trachea, bronchitis, and pneumonia. To these difficulties must be added the dread of the parents to have any operation performed, the dangers of anæsthesia, the disadvantages of operating at night, shock, the care which must be devoted to the tube, and the necessity of seeing that the surrounding atmosphere is sufficiently moist for respiration. On the other hand, the operation of intubation is bloodless, and after a little practice can be performed very easily. Its advantages, compared with tracheotomy, are, the parents will usually consent, there is no need of an anæsthetic, laryngeal stenosis can be relieved more quickly and just as effectively, shock is absent or only very moderate, the irritation of the tube is much less than that of a canula, and is limited to the *rima glottidis* and the lower end of the tube; the air inhaled through the tube is warm and moist, and the danger from lung-complications is much less; there is no bleeding, the time required for the operation is insignificant; if coughing is caused by the introduction of the tube, the result will usually be the expulsion of more or less false membrane; if the patient recovers no unsightly scar will be left; the after-treatment is simple and does not tax the physician, as is frequently the case after tracheotomy; the patient can use his voice in a more audible manner than after tracheotomy; it does away with any possible necessity of sucking out the contents of the tube, a proceeding which has cost the lives of several physicians; it can be performed on very young children, often in cases in which tracheotomy would be almost or quite impossible.

The chief disadvantages of the tube are, its introduction may cause portions of membrane to be forced into the trachea with the result of occluding its lumen; such an event might cause death unless quickly remedied; the tube may become obstructed by mucus, but this would usually excite coughing and be readily expelled; the difficulty in swallowing interferes with nutrition, and in some cases it has been found necessary to feed the patient through an œsophageal tube or *per rectum;* the tube may be coughed up, in such cases a larger one should be used; in exceptional cases the tube may cause ulceration; the assertion that the so-called *Schluck* pneumonia is caused by the entrance into the bronchi of articles of food which have slipped by the tube has not been confirmed, up to the present time, by autopsies. As yet the number of recoveries after intubation has been no greater than after tracheotomy, and according to some tables the percentage of recoveries after tracheotomy is greater. The usefulness of the operation (intubation) will become more and more apparent as it becomes better known, and the author even predicts that the time is not far distant when it will have entirely supplanted tracheotomy. In his own practice he has performed tracheotomy thirty-four times with fifteen recoveries, and intubation twenty-seven times with thirteen recoveries. The age of the patients who recovered from intubation ranged from thirteen months to five years. A. F. C.

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